Vol. 1045 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

August 14, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF THE

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 14, 1984 Volume 1045 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,168,308, Re. S.N. 605,760, Filed May 1, 1984, Cl. 424/244, COMPOSITION FOR ENHANCING THE ADMINISTRATION OF PHARMACOLOGICALLY ACTIVE AGENTS, Karl A. J. Wretlind, et al., Owner of Record: *Kabivitrum AB, Stockholm, Sweden,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 125

4,246,904, Re. S.N. 461,297, Filed Jan. 27, 1983, Cl. 313/99, SURGICAL SUTURE DERIVED FROM SEGMENTED POLYETHER-ESTER BLOCK COPOLYMERS, Donald S. Kaplan, Owner of Record: *American Cyanamid Co., Stamford, Conn.,* Attorney or Agent: Charles F. Costello, Jr., Ex. Gp.: 256

4,257,088, Re. S.N. 475,134, Filed Mar. 14, 1983, Cl. 363/18, HIGH-EFFICIENCY SINGLE ENDED INVERTER CIRCUIT, Ole K. Nilssen, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 212

4,261,443, Re. S.N. 485,106, Filed Apr. 14, 1983, Cl. 188/73.30, DISC BRAKES FOR VEHICLES, Andrew C. W. Wright, Owner of Record: *Girling Ltd., Birmingham, England,* Attorney or Agent: Samuel Scrivener, Jr., et al., Ex. Gp.: 314

4,271,340, Re. S.N. 557,539, Filed Dec. 2, 1983, Cl. 200/144B, ELECTRICAL VACUUM SWITCH HAVING MEANS FOR GENERATING AN AXIAL MAGNETIC FIELD BETWEEN THE CONTACT FACES, Bertus Griesen, Owner of Record: *Hazemeijer B. V., Hengelo (O), The Netherlands,* Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 215

4,312,357, Re. S.N. 573,614, Filed Jan. 25, 1984, Cl. 128/664, TRANSILLUMINATION DIAGNOSTIC METHOD AND APPARATUS, Torsten Andersson, et al., Owner of Record: *Sinus Medical Equipment AB, Stockholm, Sweden,* Attorney or Agent: Alan E. Kopecki, et al., Ex. Gp.: 335

4,321,754, Re. S.N. 582,887, Filed Feb. 23, 1984, Cl. 33/180.AT, VEHICLE BODY-AND-FRAME ALIGNMENT APPARATUS, William Colby, Owner of Record: *Said William Colby Assors to 25% to Stephen A. Colby, Newport Beach, Calif.,* Attorney or Agent: Larry K. Roberts, Ex. Gp.: 246

4,385,761, Re. S.N. 613,802, Filed May 23, 1984, Cl. 272/144, WEIGHTED ROTATABLE THERAPEUTIC EXERCISE DECIVE, Max Rice, Owner of Record: *Inventor,* Attorney or Agent: John O. Graybeal, Ex. Gp.: 334

4,409,431, Re. S.N. 613,085, Filed May 22, 1984, Cl. 174/103, OIL WELL CABLE, David H. Neuroth, Owner of Record: *Harvey Hubbell, Inc., New Haven, Conn.,* Attorney or Agent: Jerry M. Presson, Ex. Gp.: 215

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,226,630, Reexam. No. 90/000,587, Requested: July 2, 1984, Cl. 106/85, LEACH-RESISTANT SOLID BODIES FLY ASH AND HEAVY METAL SLUDGE, Robert W. Styron, Owner of Record: *Amax Environmental Services, Inc., Golden, Colo.,* Attorney or Agent: Roland T. Bryan, Ex. Gp.: 113, Requester: Owner

4,305,796, Reexam. No. 90/000,589, Requested: July 11, 1984, Cl. 204/159.19, METHODS OF PREPARING POLYIMIDES AND ARTIFACTS COMPOSED THEREOF, John Gagliani, et al., Owner of Record: *IML Corp., Elk Grove, Ill.,* Attorney or Agent: William T. Rifkin, Ex. Gp.: 150, Requester: Owner

4,307,764, Reexam. No. 90/000,585, Requested: July 6, 1984, Cl. 150/1, BULK MATERIAL TRANSPORT BAG, Peter J. Mattrass, Owner of Record: *Bulk Lift International, Inc., Des Plaines, Ill.,* Attorney or Agent: Thomas E. Dorn, Ex. Gp.: 241, Requester: Cajun Bag O Supply Co., Inc., Crowley, La.

4,316,579, Reexam. No. 90/000,592, Requested: July 12, 1984, Cl. 239/123, MULTI-PURPOSE SEAL FOR POP-UP SPRINKLER, Charles A. Ray, et al., Owner of Record: *Anthony Manufacturing Corp., Azusa, Calif.,* Attorney or Agent: Fulwider, Patton, et al., Ex. Gp.: 313, Requester: L. R. Nelson Corp., Peoria, Ill.

4,360,619, Reexam. No. 90/000,583, Requested: July 5, 1984, Cl. 524,181, STABILIZER COMPOSITIONS AND POLYMERS CONTAINING SAME, Thomas G. Kugele, et al., Owner of Record: *Carstab Corp., Reading, Ohio,* Attorney or Agent: Gerald K. White, Ex. Gp.: 150, Requester: Sheridan Neimark, Washington, D.C.

4,369,181, Reexam. No. 90/000,594, Requested: July 13, 1984, Cl. 424/180, PROCESS FOR TREATING PROLIFERATIVE SKIN DISEASES USING CERTAIN 6,8-SUBSTITUTED RIBOFURANOSYL-PURINE - 3',5' - CYCLIC PHOSPHATES, Jon P. Miller & Wesley W. Zmolek, Owner of Record: *Requester,* Attorney or Agent: Ciotti & Murashige, Ex. Gp.: 123, Requester: SRI International, Menlo Park, Calif.

4,406,605, Reexam. No. 90/000,579, Requested: June 25, 1984, Cl. 264/40.1, APPARATUS FOR FORMING CONCRETE PIPE OF UNIFORM DENSITY INCLUDING CONTROL MEANS TO VARY FEED RATE OF CONTRETE/AGGREGATE AS FUNCTION OF PACKERHEAD TORQUE, George E. Hand, Owner of Record: *Kerr Concrete Pipe Co., Folsom, N.J.,* Attorney or Agent: Ronald G. Goebel, Ex. Gp.: 130, Requester: Owner

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Patents Available for License or Sale

4,323,118. APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS. *Conrad Bergmann,* Bergmann's Department Store, 1365 Lincoln Ave., San Jose, Calif. 95125.

The following patents are offered by Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514.

4,333,423. ENGINE STEAM STRATIFIER.

4,425,892. ENGINE INTAKE STRATIFIER FOR CONTINUOUSLY VARIABLE STRATIFIED MIXTURES.

4,372,256. CHAR BURNING FREE PISTON GAS GENERATOR.

4,381,745. POROUS BURNER DIESEL ENGINE.

4,412,511. CHAR AND OIL BURNING ENGINE.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 4,093,859, Gregory A. Davis, Kenneth E. Krippner, Jan A. Roestel, Gottfried Vonk and Albert R. Zacher, Jr., AXIAL TOMOGRAPHIC APPARATUS, Interference No. 100,668, decided Jan. 24, 1984, claims 1, 3, 4, 7, 8, 9, 22 & 23.

Patent No. 4,162,326, Alexander Mihailovski, INSECT CONTROL AGENTS, Interference No. 100,652, decided May 17, 1984, claims 4 & 11.

Patent No. 4,165,952, Charles E. Bennett, HEAT ENERGIZED VAPOR ADSORBENT PUMP, Interference No. 100,643, decided Jan. 26, 1984, claims 14 & 27.

Patent No. 4,229,710, Itamar Shoshan, WAVELENGTH SELECTOR FOR TUNABLE LASER, Interference No. 100,716, decided Dec. 7, 1983, claims 1, 2, 4, 5, 6 & 11.

Patent No. 4,231,739, Robert T. Iudica, UNITARY CARTRIDGE TYPE TURBINE ASSEMBLY, Interference No. 101,038, decided May 2, 1984, claims 1–15.

Patent No. 4,231,999, Jan Per Erik Carlsson, Rolf Erik Axel Verner Axen and Hakan Nils Yngve Drevin, METHOD IN ASSAYING METHODS INVOLVING BIOSPECIFIC AFFINITY REACTIONS AND REAGENT FOR USE IN SAID METHOD, Interference No. 101,082, decided Apr. 20, 1984, claims 9/1 & 9/5.

Patent No. 4,234,584, Rudolf Lattrell, Wilhelm Bartmann and Hermann Gerhards, SUBSTITUTED PHENYLPIPERAZINE DERIVATIVES, Interference No. 100,865, decided Apr. 27, 1984, claims 1–4.

Patent No. 4,242,023, Leif Mohrsen, SHEET POSITIONER, Interference No. 100,883, decided Feb. 9, 1984, claims 1–8.

Patent No. 4,262,162, Wolfgang G. Plinke, Dimitri R. Stein and Gerhard Stoeckl, COMPOSITE CORRUGATED ELECTRICAL CABLES, Interference No. 100,884, decided Jan. 25, 1984, claims 1 & 2.

Patent No. 4,317,802, Jacques Dugua, PROCESS FOR SEPARATING MOLYBDENUM AND/OR OTHER METALS CONTAINED IN RESIDUAL ORGANIC EFFLUENTS, Interference No. 100,974, decided May 15, 1984, claims 1–4.

Patent No. 4,330,244, Helmut Heimberger, APPARATUS FOR PRODUCING COUPLING ELEMENTS FOR SLIDE-FASTENER STRINGER, Interference No. 101,130, decided May 25, 1984, claims 1–3.

Patent No. 4,361,080, David K. Smith, Nigel Harlow and Samuel W. Maxfield, FLOOR FOR LAUTERING VESSELS, Interference No. 101,085, decided Apr. 20, 1984, claim 1.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 14, 1984

Re. 31,118	4,391,535	4,419,165	4,438,923
D. 272,251	4,394,291	4,420,538	4,439,258
3,993,799	4,395,742	4,420,913	4,439,782
4,178,634	4,399,093	4,421,001	4,440,671
4,286,083	4,399,846	4,421,100	4,441,679
4,297,139	4,401,556	4,421,983	4,441,964
4,311,724	4,401,744	4,422,089	4,442,088
4,328,529	4,402,066	4,422,844	4,442,277
4,333,433	4,402,752	4,423,283	4,442,322
4,340,061	4,403,859	4,423,702	4,442,345
4,341,560	4,405,805	4,424,101	4,442,355
4,341,742	4,407,919	4,424,310	4,442,868
4,350,771	4,409,563	4,425,208	4,443,358
4,354,069	4,410,437	4,425,383	4,444,258
4,355,199	4,410,515	4,427,292	4,444,261
4,360,258	4,411,226	4,429,692	4,444,293
4,361,894	4,412,046	4,430,072	4,444,414
4,362,977	4,414,532	4,431,797	4,444,519
4,368,711	4,415,175	4,434,953	4,444,623
4,369,559	4,415,233	4,435,516	4,444,665
4,372,020	4,415,744	4,435,791	4,445,061
4,378,696	4,415,846	4,436,268	4,445,162
4,379,155	4,416,339	4,437,065	4,445,478
4,383,039	4,416,508	4,437,452	4,445,544
4,383,891	4,416,849	4,438,028	4,447,223
4,385,932	4,417,373	4,438,260	
4,386,058	4,418,120	4,438,344	
4,386,977	4,418,432	4,438,351	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
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Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
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Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 7, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-21-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	6-24-83
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-21-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	6-30-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	8-25-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	10-01-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-29-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-29-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	3-29-82
DESIGN, GROUP 290—K. L. CAGE, Director	4-02-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	9-14-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-08-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-29-81

Expiration of patents: The patents within the range of numbers indicated below expire during July 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,328,806 to 3,333,279, inclusive

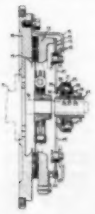
Plant Patents . . . . . Numbers 2,750 to 2,755 inclusive

REEXAMINATIONS

AUGUST 14, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,416,637 (230th)
RADIALLY MOVABLE CLUTCH BEARING
Jean Maurice, Paris, France, assignor to Société Anonyme Francaise du Ferodo, Paris, France
Reexamination Request No. 90/000,401, Jun. 15, 1983.
Reexamination Certificate for Patent No. 3,416,637, issued Dec. 17, 1968, Ser. No. 601,134, Dec. 12, 1966.
Filed Jun. 15, 1983, Ser. No. 601,134
Claims priority, application France, Dec. 20, 1965, 65.42919
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

Claim **12** is determined to be patentable as amended:

Claims **13–22**, dependent on amended claims, are determined to be patentable.

New claims **23–26** are added and determined to be patentable.

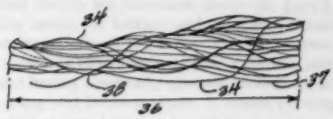
1. In a rotary clutch having a declutching device rotating in synchronism with a clutch about the axis of the clutch, a driving element to move the declutching device, a fixed guide substantially coaxial with the clutch, and an actuating element slidable along the fixed guide to move the driving element; the improvement comprising a self-centering rotary coupling positioned to transmit thrust from the actuating element to the driving element in a direction parallel to the axis of the clutch, means mounting the coupling for movement in any direction in a plane perpendicular to the axis of the clutch, and friction means retarding said movement of the self-centering coupling, whereby, if during assembly the axis of said guide and the axis of the clutch are not exactly in coincidence, at least a portion of said coupling automatically changes position and remains precisely centered with respect to the axis of said clutch.

B1 3,824,776 (231st)
FABRIC HAVING IMPROVED PICK RESISTANCE
Joe F. London, Jr., Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Reexamination Request No. 90/000,408, Jun. 20, 1983.
Reexamination Certificate for Patent No. 3,824,776, issued Jul. 23, 1974, Ser. No. 217,060, Jan. 11, 1972.
Filed Jun. 20, 1983, Ser. No. 217,060
Int. Cl.³ D02G *3/24, 3/34*
U.S. Cl. 57—208

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

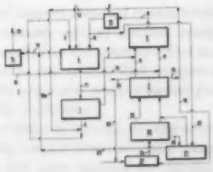
The patentability of claims **1–6** is confirmed.

1. A fabric of improved pick resistance containing a tex-



tured, air jet interlaced yarn comprising a plurality of continuous synthetic thermoplastic filaments, said yarn being characterized by uniform repeating sections of about ½–1 inch in length, each said section being composed of a relatively open bulky and lofty portion of false twisted multifilaments and a relatively short node portion where the multifilaments are closer together and are interlaced and encircled.

B1 4,294,815 (232nd)
PROCESS OF PRODUCING CHLORINE DIOXIDE AND, IF DESIRED, CHLORINE
Karl Lohrberg, Heusenstamm; Siegfried Bielz, Frankfurt am Main, and Paul Janisch, Steinau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Reexamination Request No. 90/000,247, Aug. 26, 1982.
Reexamination Certificate for Patent No. 4,294,815, issued Oct. 13, 1981, Ser. No. 93,708, Nov. 13, 1979.
Filed Aug. 26, 1982, Ser. No. 93,708
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849250
Int. Cl.³ C01B *11/02*
U.S. Cl. 423—478



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended:

Claims **2–13**, dependent on amended claims, are determined to be patentable.

New claims **14–23** are added and determined to be patentable.

1. A process for producing ClO_2 which comprises
(A) feeding aqueous NaCl into an electrolyte membrane cell and therein electrolyzing the same to obtain H_2, Cl_2, **[NACH]** *NaOH and an anolyte containing $NaClO_3$;*

(B) reacting the H_2 and Cl_2 [formed] *obtained* in step A to form HCl;

(C) feeding HCl from step B into a *first* chlorate reaction zone;

(D) feeding $NaClO_3$ into said *first* chlorate reaction zone, with $NaClO_3$ being obtained as a product of an electrolysis of NaCl;

(E) reacting sodium chlorate with hydrochloric acid *in aqueous solution* in said *first* chlorate reaction zone to form chlorine dioxide, chlorine and sodium chloride;

(F) separating said ClO_2 and Cl_2 from NaCl and electrolyzing said NaCl in an electrolysis cell to obtain $NaClO_3$ and recycling the same to step D; *and*

(G) employing said $NaClO_3$ in said anolyte to generate ClO_2 by contacting the $NaClO_3$ from said anolyte with either HCl either

(1) in said first chlorate reaction zone; or

(2) in a second chlorate zone to which HCl is fed.

REISSUES

AUGUST 14, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,644
Patent Not Issued For This Number

Re. 31,645

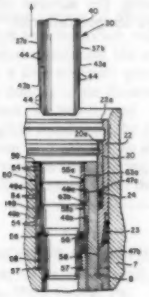
SAFETY APPARATUS FOR AUTOMATICALLY SEALING HYDRAULIC LINES WITHIN A SUB-SEA WELL CASING

A. Michael Regan, Huntington Beach, Calif., assignor to Regan Offshore International, Inc., Torrance, Calif.

Original No. 4,109,712, dated Aug. 29, 1978, Ser. No. 820,829, Aug. 1, 1977. Application for reissue Jun. 25, 1980, Ser. No. 163,231

Int. Cl.³ E21B *34/14*

U.S. Cl. 166—340 **16 Claims**



1. An improved safety apparatus for automatically sealing hydraulic lines within a sub-sea well casing when said casing is disconnected from an associated well head connector, comprising the provision of:

mandrel means associated with a well head connector assembly;

valve means generally coaxially aligned within said casing head for receiving said mandrel means and for controlling fluid flow through associated hydraulic lines, said valve means being urged into a valve-opened position by said mandrel means as said well head connector assembly is secured to said well casing head; and

bias means associated with said valve means for urging said valve means into a valve-closed position to seal said hydraulic lines when said mandrel means is withdrawn from said valve means.

Re. 31,646

ADJUSTABLE CONTROL CONSOLE FOR VEHICLES

Duane E. Beals, and Russell D. Page, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Original No. 3,737,003, dated Jun. 5, 1973, Ser. No. 139,362, May 3, 1971. Continuation of Ser. No. 937,399, Aug. 28, 1978, abandoned. Application for reissue Sep. 2, 1980, Ser. No. 183,677

Int. Cl.³ B60K *29/00*

U.S. Cl. 180—78 **15 Claims**

1. [An] *In an* adjustable control console for a vehicle [comprising] *having:*

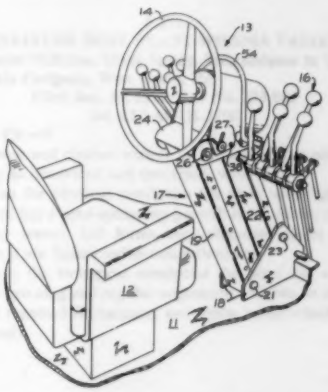
a console support bracket means having means for fixed attachment to said vehicle adjacent the operator's station thereof,

a pivotable pedestal having a lower end attached to said bracket means and extending substantially upward therefrom, said pedestal having first and second upwardly extending link members each having a lower end pivoted to said bracket means for oscillation about spaced apart parallel axes, said pedestal further having a third platform link *member* extending between the upper ends of said first and second [links] *link members* and being pivoted to each thereof to maintain said third link *member* in a substantially fixed orientation relative to said bracket means as said pedestal is pivoted relative thereto,

a first manually manipulatable control element for said vehicle situated adjacent said platform link *member* and supported thereby for movement therewith, [and]

latching means for locking said *pivotable* pedestal against pivoting movement relative to said bracket means at any of a plurality of inclinations relative thereto, said latching means having a manually operable element for selectively releasing said latching means to enable pivoting of said *pivotable* pedestal relative to said bracket means, *and*

a plurality of control valves positioned adjacent the bracket means, each of said control valves having an actuator arm connected thereto, the improvement comprising:



a steering wheel support attached to said platform link member, said manipulatable control element being a steering wheel rotatably attached to the steering wheel support;

a shaft secured to one of said link members of said pivotable pedestal at an upper end of the pivotable pedestal and extending outwardly therefrom ;

a plurality of additional controls for said vehicle, said additional controls being angled levers pivotally mounted on said shaft and having first arms adapted for manual manipulation by the operator and second arms extending radially from the shaft; and

a plurality of links each having one end pivotally connected to one of the second arms of the levers and the other end connected to one of the actuator arms.

Re. 31,647

STARTUP PROCEDURE FOR REFORMING CATALYSTS

William D. McHale, Mantua, and Hans J. Schoennagel, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

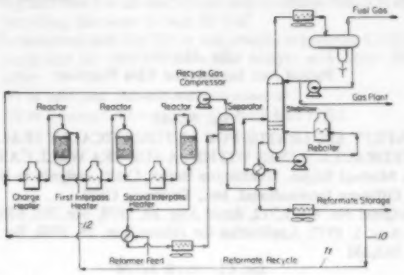
Original No. 4,261,810, dated Apr. 14, 1981, Ser. No. 130,802, Mar. 17, 1980. Application for reissue May 27, 1982, Ser. No. 382,515

Int. Cl.³ C07C *35/08*

U.S. Cl. 208—138 **27 Claims**

1. In a process for reforming a hydrocarbon charge under reforming conditions in the presence of a [sulfur-sensitive

metal-containing reforming catalyst] *reforming catalyst selected from the group consisting of platinum, platinum and iridium or platinum, iridium and rhenium,* in a reforming zone, wherein said charge conducted to said reforming zone contacts said catalyst in an initial or [freshy] *freshly* regenerated state giving rise to over-cracking of said charge with concomitant loss in activity thereof and excessive temperature rise in said zone, the improvement which comprises pre-treating said catalyst prior to contact with said charge by passing thereover a reformate characterized by an octane number (R+O) of between about 90 and about 100, [and] an aromatics content within the approximate range of 40 to 50 mole percent *and sulfur content up to 10 ppm* for a period of time, generally at least about 0.5 hour and no more than about 3 hours at a temperature between about 600° F. and about 750° F., thereby



substantially suppressing the adverse effects of said over-cracking and excessive temperature rise.

PLANT PATENTS

GRANTED AUGUST 14, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,270

MINIATURE ROSE PLANT—WILBENTUR VARIETY

J. Benjamin Williams, Silver Spring, Md., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 30, 1982, Ser. No. 393,862

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of Miniature rose plant, substantially as illustrated and described, wherein:

(a) from the physical standpoint the plant with light green adult wood has a low compact growth habit, and forms clusters of very double white flowers which often have a pink blush toward the center; and

(b) from the biological standpoint the plant has vigorous and regular vegetation, and exhibits an abundant and repeated florescence throughout the growing season thereby creating a substantially constant floral display.

5,271

MINIATURE ROSE PLANT—WILDAK VARIETY

J. Benjamin Williams, Silver Spring, Md., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 30, 1982, Ser. No. 393,865

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of Miniature rose plant, substantially as illustrated and described, wherein:

(a) from the physical standpoint the plant with medium green adult wood has a semi-erect growth habit, forms dark green glossy leaves, and forms double flowers which exhibit a blend of orange and yellow tones with a pinkish accent at the flower center; and

(b) from the biological standpoint the plant has vigorous and regular vegetation, exhibits an abundant and repeated florescence, exhibits the ability to grow well in the greenhouse or outside, possesses the ability for its blossoms to last for a long time, and forms petals which detach cleanly.

5,272

MINIATURE ROSE PLANT-WILSMA VARIETY

J. Benjamin Williams, Silver Spring, Md., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 30, 1982, Ser. No. 393,863

Int. Cl.[3] **AO1H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of Miniature rose plant, substantially as illustrated and described, wherein:

(a) from the physical standpoint the plant with light green wood has a semi-spreading growth habit, forms abundant shiny leaves, and forms very abundant single flowers which are Spinel red in coloration; and

(b) from the biological standpoint the plant has vigorous, low growing and regular vegetation, exhibits an abundant and repeated florescence, and forms petals which detach cleanly.

PATENTS

GRANTED AUG. 14, 1984

ERRATA

For CLASS	See PATENT NO.
446–491	4,464,860
446–370	4,464,861
052–693	4,464,885
434–233	4,465,477
430–292	4,465,704
264–046	4,465,710
528–049	4,465,718
528–086	4,465,721
528–088	4,465,722
536–018	4,465,827
536–018	4,465,828
524–432	4,465,829

PATENTS

GRANTED AUGUST 14, 1984

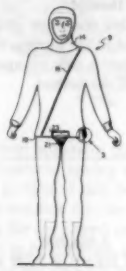
GENERAL AND MECHANICAL

4,464,795

EASY ACCESS UNDERWATER DIVING SUIT

Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.

Filed Jun. 17, 1982, Ser. No. 389,407
Int. Cl.³ B63C *11/04*
U.S. Cl. 2—2.1 R **14 Claims**



6. A suit, comprising:

a suit body made of a flexible waterproof material, said suit body including a midsection which is foldable upon itself around its entire circumference to thereby shorten the length of said suit body to accommodate a person's size;

access means extending diagonally across an upper front portion of said suit body above said foldable midsection for providing maximum access to the interior of the suit body; and

means for holding the suit body in its shortened configuration.

4,464,796

GLOVE FORMED OF RUBBER OR PLASTICS MATERIAL AND MOLD FOR FABRICATING THE SAME

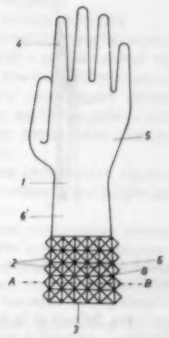
Oswald Heissenberger, Pottschach, and Erwin Brandstätter, Neunkirchen, both of Austria, assignors to Semperit Aktiengesellschaft, Traiskirchen, Austria

Filed Jun. 14, 1982, Ser. No. 388,094
Claims priority, application Austria, Jun. 23, 1981, 2766/81
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—168 **3 Claims**

1. A glove formed of rubber or plastics material, especially an examination or surgical glove devoid of any anti roll-down beaded edge, said glove comprising:

a finger portion, hand portion and wrist portion; said wrist portion including a cuff region; and a structured surface provided at the cuff region; said structured surface being constituted at the outer surface of the glove by non-continuous raised substantially pyramid-like portions and at the inner surface of the glove by substantially complementary, non-continuous substantially pyramid-like recesses wherein a plurality of continuous circumferential bands are formed at the inner surface between said portions whereby the anti roll-down beaded edge can be eliminated.

3. A mold for the fabrication of a glove formed of rubber or plastics material, especially an examination or surgical glove having a finger portion, a hand portion, and a wrist portion



devoid of any anti roll-down beaded edge, said mold containing a finger portion, hand portion and wrist portion, said wrist portion including a cuff region, a structured surface provided at the cuff region, said structured surface being constituted so as to form at the outer surface of the wrist portion of the glove non-continuous raised substantially pyramid-like portions and at the inner surface of the glove substantially complementary, non-continuous substantially pyramid-like recesses and a plurality of continuous circumferential bands between said portions, the improvement wherein:

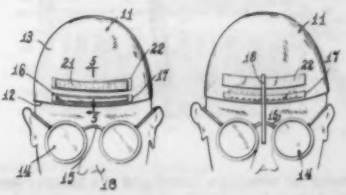
the mold at the region of the cuff possesses non-continuous substantially pyramid-like recesses and a plurality of continuous ridges between said recesses.

4,464,797

SURGICAL HEADGEAR

Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139

Filed Jan. 19, 1981, Ser. No. 226,248
Int. Cl.³ A42B *1/24*
U.S. Cl. 2—199 **8 Claims**



3. A surgical headwear for persons wearing eyeglasses having a nose bridge, said headwear including a rim and a crown, a strip of pliable material attached to the outside surface of the

crown, a moisture absorption element attached to the outside surface of the headwear, said strip being removable from the headwear for re-positioning in engagement with the nose bridge and the crown, and the absorption element also being removable for relocation on the inside surface of the crown closely adjacent to the rim.

4,464,798

GARMENT HAVING CONCEALED POUCH

Jeanne Livingstone, 1025 Stuart St., Helena, Mont. 59601

Filed May 26, 1983, Ser. No. 498,321
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—247 **10 Claims**

1. In combination with a flexible garment having a skirt with a hem at an open end thereof;

(A) at least one elongate pocket adjacent the open end of the skirt, said pocket being defined at its bottom by a selvage portion of the garment, the pocket comprising:

(A_1) at least one laminate which is twice folded upon itself whereby a top and a bottom of the pocket is defined, the laminate terminating in opposed free ends and

(A_2) an elongate fastener closure for the pocket adjacent the top thereof, the free ends of the laminate securing the closure against displacement; said at least one laminate being secured to the skirt adjacent the top of the laminate and the bottom thereof.

4,464,799

DEVICE TO SECURE A THROATBAND ON HELMETS AND SIMILAR HEADGEAR

Pier L. Nava, Verderio Superiore (Como), Italy

Filed Jul. 7, 1981, Ser. No. 280,964
Claims priority, application Italy, Jul. 16, 1980, 22317/80[U]
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—421 **8 Claims**

1. Device for securing a throatband of a helmet comprising:

(a) the helmet having at least one upper opening and one lower opening situated within a wall of said helmet, said upper and lower openings are divided by a portion of said wall;

(b) a plaque having a first end attached to the throatband and a second end designed for an engagement with said upper and lower openings, said second end having an angle bend portion and a hook shaped portion, said angle bend and hook shaped portions are connected to each other by a connecting portion, said angle bend portion engaging said lower opening, said hook shaped portion engaging said upper opening and said connecting portion engaging said portion dividing said openings;

(c) a cover portion interposed between said second end of the plaque and visor means of the helmet, said cover portion resiliently fitted within the wall of the helmet and said upper opening thereof;

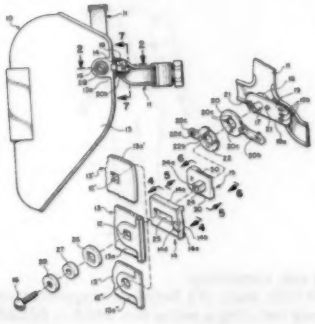
whereby in a working condition of the device said visor means presses said cover portion to said second end of the plaque to ensure a safe engagement of said second end to the wall of the helmet.

4,464,800

ATTACHMENT DEVICE FOR MOUNTING FACE-PROTECTIVE SHIELDS ON HEADGEAR

David B. Edwards, 762 S. Redwood Rd., Salt Lake City, Utah 84125

Filed Aug. 20, 1982, Ser. No. 406,041
Int. Cl.³ A61F *9/02*
U.S. Cl. 2—452 **12 Claims**



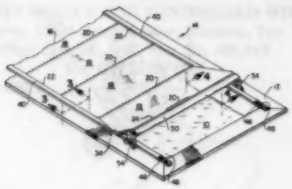
1. An attachment device for mounting a face-protective shield, such as a welding helmet, on receiving headgear provided with internally threaded openings at opposite sides thereof for threaded engagement by attachment screws, said shield being provided with attachment-screw-accommodating openings adapted for axial alignment with said internally-threaded openings, respectively, in the screw attachment of face shield to headgear, said attachment device comprising two separate, mutually elongate and non-rotatable pieces adapted for interfitted engagement with each other at selected, longitudinally adjusted positions which are determined by the requirements of the particular headgear and face shield concerned to enable one to accommodate the other, and being provided, further, with confronting faces, respectively, one of said pieces having a tubular boss at one face thereof for extending through a corresponding attachment opening of the face-protective shield and for receiving an attachment screw, and the other of said pieces having an elongate, boss-accommodating slot extending longitudinally thereof; and longitudinally-extending, interengagement means carried by said confronting faces of said pieces for interengagement at adjusted positions of said pieces relative to each other.

4,464,801

SWIMMING POOL COVER WITH ADJUSTABLE SIDE GORES

Joe H. Lamb, 117 W. Fireclay Ave., Murray, Utah 84107

Filed Feb. 11, 1983, Ser. No. 465,778
Int. Cl.³ E04H 3/19
U.S. Cl. 4—502 16 Claims



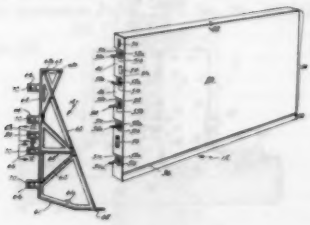
1. An adjustable cover apparatus comprising:
a flexible sheet of material having a peripheral edge and a forward edge, a portion of said flexible sheet being transversely enlarged towards said forward edge;
means for securing the peripheral edge of the flexible sheet around an object to be covered; and
means for supporting the forward edge of the flexible sheet above an adjacent portion of the flexible sheet, said supporting means being slidably connected to the forward edge such that excess slack in the transversely enlarged portion of the flexible sheet may be removed by sliding the forward edge along the supporting means towards a central portion of said support means.

4,464,802

STRUCTURAL FOAM SWIMMING POOL WALL AND BRACE AND METHOD OF ERECTING SAME

Robert L. Glonek, 3256 Rickman, NE., Grand Rapids, Mich. 49505; Paul Kantor, and Loren R. Perry, both of Berrien Springs, Mich., assignors to Robert L. Glonek, Grand Rapids, Mich.

Filed Oct. 16, 1981, Ser. No. 312,349
Int. Cl.³ E04H 3/18, 3/16
U.S. Cl. 4—506 39 Claims



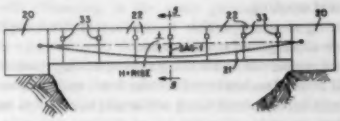
1. A pool wall assembly comprising:
a supporting brace;
first and second wall panels;
first means for securing said first panel to said brace; and
second means for securing said second panel to at least one of said intersecured brace and first panel, said second securing means being actuable independently of said first securing means whereby said brace can be secured to only said first panel to facilitate alignment of said brace and first panel prior to securement of said second panel.

4,464,803

TENSION ARCH STRUCTURE

Samuel G. Bonasso, 241 S. High St., Morgantown, W. Va. 26505

Filed Apr. 28, 1982, Ser. No. 372,805
Int. Cl.³ E01D 11/00; E04B 1/32
U.S. Cl. 14—20 7 Claims



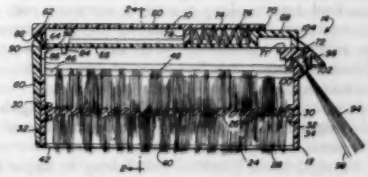
1. A load-bearing structure for supporting a vertical load over a span comprising in combination:
(a) opposing end supports;
(b) a plurality of tension elements;
(c) each tension element strung between and fastened to said end supports with a predetermined sag;
(d) a plurality of transverse compressive elements;
(e) each transverse compressive element having a depth greater than the sag of the tension element;
(f) each transverse compressive element supported by the tension elements;
(g) each transverse compressive element having an upper surface at the predetermined height above the level of the tension element;
(h) each transverse compressive element having a lower surface below the level of the tension element;
(i) each transverse compressive element fitted in abutting relationship with the adjoining transverse compressive element;
(j) the end transverse compressive elements fitted in horizontal abutting relationship with the end supports;
(k) the point of attachment of the tension element to the abutment being above the center of compressive force of the transverse compressive element at its interface with said abutment;
(l) means to resist shear between the adjoining transverse compressive elements;
whereby the load over the span is transmitted to the end supports in part through the compressive forces of the transverse compressive element and in part through the tensile force of the tension element.

4,464,804

HANDHELD SWEEPER

Ross E. Hopkins, Emporia, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Sep. 2, 1982, Ser. No. 414,410
Int. Cl.³ A47L 11/33
U.S. Cl. 15—42 6 Claims



1. A handheld sweeper comprising:
a housing grippable by hand,
said housing defining a bottom aperture,
a rotary brush mounted for rotation about an axis in said housing,
a portion of said brush extending through said aperture to sweep debris from a surface into said housing,

said housing further defining a compartment for collecting debris swept into said housing, and having an end defining an opening remote from said hand and communicating with said compartment for the discharge of collected debris,

door means for closing said opening,

said door means adapted to be movable away from closing said opening,

operating means operable to move said door means away from closing said opening, and

control means for controlling said operating means,

said control means being remote from said door means and accessible to said hand while said hand grips said housing.

4,464,805

STRIP PICKLING APPARATUS WITH STRAIGHT-THROUGH STRIP TRAVEL

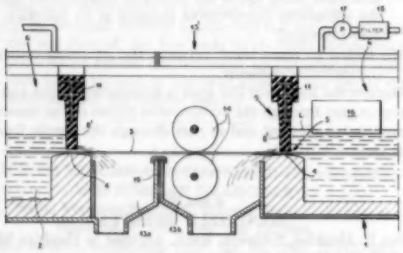
Oskar Noë; Andreas Noë, both of Mühlheim an der Ruhr; Rolf Noë, Berlin-Charlottenburg, and Heinz W. Berger, Neukirchen-Vluyn, all of Fed. Rep. of Germany, assignors to BWG Bergwerk- Und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,066

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209890

Int. Cl.³ A47L *1/02, 11/02*

U.S. Cl. 15—102 **13 Claims**



1. An apparatus for pickling a metal strip having a pair of opposite faces, the apparatus comprising:

feed means including upstream and downstream bridle-roller pairs for longitudinally displacing the strip under longitudinal tension along a straight transport path from the upstream bridle-roller pair to the downstream bridle-roller pair and with one of the strip faces directed upward and the other strip face directed downward;

a housing;

a succession of transverse partitions subdividing the housing longitudinally into a longitudinal succession of compartments, each partition having

a rigid lower partition half having an upper edge, the upper edges all being longitudinally aligned and touching the lower face of the strip moving along the path, and

an upper partition half having a flexible lower edge portion elastically engaging the upper face of the strip moving along the path; and respective acid baths in the compartments.

4,464,806

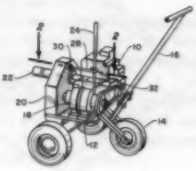
SEWER ROD TURNING MACHINE SAFETY DEVICE

Charles J. Prange, Cridersville, Ohio, assignor to Sewer Rodding Equipment Co., Lima, Ohio

Filed Sep. 8, 1982, Ser. No. 415,810

Int. Cl.³ B08B *9/02*

U.S. Cl. 15—104.3 SN **3 Claims**



1. In a sewer cleaning rod turning machine device having a motor, a transmission, a gear box and a rod coupling drive shaft, the improvement comprising; shift lever means connected to said transmission for engaging said transmission to turn said sewer cleaning rods in a first direction or in a direction in reverse to said first direction; said shift lever having a neutral position; resilient safety means engaging said shift lever for returning said shift lever to neutral, said resilient safety means comprising a spring steel bar having a bending movement which returns said shift lever to neutral when said shift lever is released.

4,464,807

FLOOR MOP

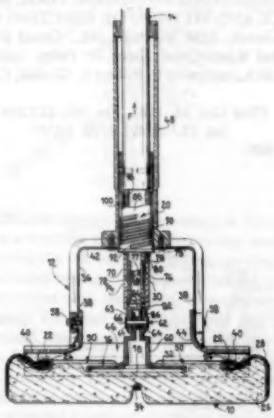
Roger Weiss, Bagnolet, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France

Filed Jun. 13, 1983, Ser. No. 503,584

Claims priority, application France, Jun. 21, 1982, 82 10808

Int. Cl.³ A47L *13/142*

U.S. Cl. 15—119 A **14 Claims**



1. A floor mop comprising an elongate handle, a bracket carried at one end of the handle, and an absorbent band mounted on the bracket, a bearing arranged on said bracket, and a torsion head rotatably mounted in said bearing, said torsion head engaging the median region of said absorbent band, and two fasteners each fixed to a respective end of said absorbent band and mounted on the bracket for movement between a washing position in which said fasteners are spaced such that said band is deployed in a plane, and a wringing position in which said fasteners are closer together and said

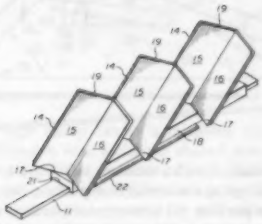
band is gathered towards said rotary head to permit twisting of the band upon rotation of said head in the bearing, wherein each of said fasteners is slidably mounted in a respective guide carried by said bracket and extending in a plane parallel to the deployment plane of said band.

4,464,808

ANTI-LIFT DEVICE FOR WINDSHIELD WIPERS

Steven R. Berry, 10601 Juniper Glen, Houston, Tex. 77041

Filed Dec. 17, 1982, Ser. No. 450,518
Int. Cl.³ B60S *1/32*
U.S. Cl. 15—250.2 **8 Claims**



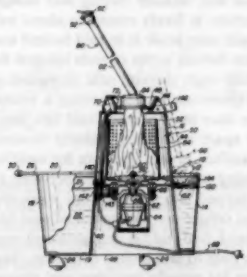
1. An anti-lift device for windshield wipers comprising;
a base member,
a series of fin members linearly disposed thereon and extending at an obtuse angle therefrom in substantially parallel relation,
each of said fin members being formed of two sections comprising flat surfaces intersecting and extending at an obtuse angle relative to each other and outwardly from the line of intersection to form an obtuse dihedral shaped fin surface,
a perpendicular reinforcing web interconnecting the rear of each of said fin members, at the base of the dihedral angle, and said base member to provide support and stability to said fin members, and
means on said base member for releasably attaching said device to a windshield wiper arm.

4,464,809

CLEANING APPARATUS

George S. Trisolini, Via Donatello 5, Palagino, Italy

Division of Ser. No. 212,634, Dec. 3, 1980, Pat. No. 4,344,201. This application Jun. 7, 1982, Ser. No. 385,819
Int. Cl.³ A47L *13/58*
U.S. Cl. 15—260 **6 Claims**



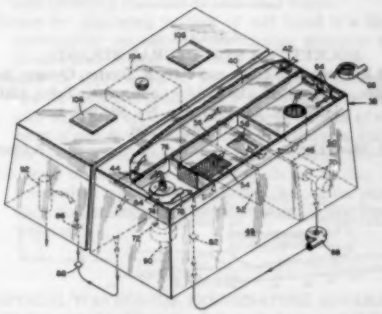
1. In a cleaning apparatus, a mop wringer for extracting from the wiper of a mop liquid cleaning medium carried by the wiper, said mop wringer comprising:
a housing;
an opening in the housing for passing at least a portion of the wiper of the mop therethrough;
a basket within the housing and juxtaposed with the opening for receiving said portion of the wiper of the mop, the basket having an axially-extending perforated wall;
means mounting the basket for rotation in the housing about an axis extending in the same general direction as the axially-extending perforated wall of the basket;
a motor coupled with the basket for rotating the basket and, consequently, the wiper of the mop when said portion of the wiper is in the basket, about said axis such that the wiper is forced against the perforated wall of the basket and cleaning medium in the wiper is extracted therefrom through the perforated wall of the basket;
the housing including a portion radially surrounding the perforated wall of the basket to establish a chamber for collecting the extracted liquid cleaning medium;
a reservoir for containing the liquid cleaning medium;
access means enabling access to the liquid cleaning medium by the wiper of the mop;
a drain for passing the collected extracted liquid cleaning medium from the chamber to the reservoir; and
filter means between the chamber and the reservoir for removing unwanted matter from the extracted liquid cleaning medium returned to the reservoir.

4,464,810

SCRUBBING MACHINE WITH LIQUID RECIRCULATION

David J. Karpanty, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Jul. 23, 1982, Ser. No. 401,069
Int. Cl.³ A47L *11/202*
U.S. Cl. 15—320 **17 Claims**

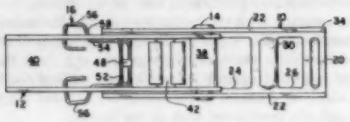


1. A scrubbing machine comprising a frame, wheel means for supporting said frame on the ground, a scrubbing brush carried by said frame, liquid collecting means carried by said frame behind said brush, a recovery tank supported by said frame, a supply tank supported by said frame, a liquid pick-up line communicating with said liquid collecting means and with said recovery tank, exhaust means communicating with said recovery tank to exhaust air therefrom, and means for supplying liquid from said supply tank toward said scrubbing brush, the improvement comprising: baffle means in said recovery tank for directing air and liquid from said pick-up line in a non-linear path through said recovery tank to separate the air and liquid, a centrifugal extracting device in said recovery tank for separating liquid and dirt, with the dirt from said extracting device collected in the bottom of said recovery tank, powered means for supplying liquid and dirt in a lower portion of said recovery tank to said extracting device, and means for supplying cleaned liquid from said extracting device to said supply tank.

4,464,811
OVER CENTER STRAP BUCKLE

Paul M. Holmes, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Sep. 16, 1982, Ser. No. 418,713
Int. Cl.³ A44B *21/00, 11/12*
U.S. Cl. 24—68 CD 5 Claims

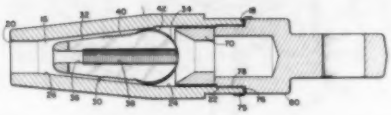


1. An over center strap buckle including a body having a U-shaped configuration defining spaced parallel sides having end edges and connected by a base, a handle pivotally mounted upon said body intermediate the body sides pivotal between strap tension and release positions, strap mounting means defined upon the handle, and latch means defined upon the handle selectively cooperating with locking notches defined upon the body side end edges to releasably lock the handle in its strap tension position, the improvement comprising, the latch means comprising solely a resilient element having a pair of opposed finger engaging portions and a handle anchor portion, said finger engaging portions including detent portions normally resiliently biased away from each other in a lateral direction with respect to said body and handle to a locking position adapted to be received within the body locking notches upon the handle being pivoted to the strap tension position and manually displaceable toward each other to an unlocking position clearing the notches to permit the handle to be pivoted to the strap release position.

4,464,812
SOCKET FOR STRUCTURAL STRAND

Edward J. Crook, Jr., Tulsa, and Gary R. Baxter, Owasso, both of Okla., assignors to The Crosby Group, Inc., Tulsa, Okla.

Filed Oct. 24, 1983, Ser. No. 544,848
Int. Cl.³ F16G *11/04*
U.S. Cl. 24—122.6 5 Claims



5. A socket for structural strand of the type having a center core surrounded by at least one outer layer of wound strand elements comprising:

(a) a sleeve having an opening therethrough defining a connector end and a strand end with an interior inwardly tapered portion to said strand end;

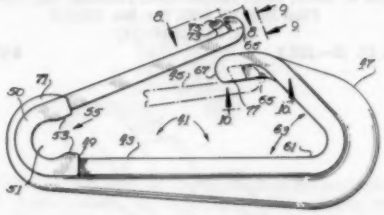
(b) a wedge for positioning in said sleeve, said wedge comprising a tapered body and a bulbous head, an axial opening through said wedge to receive said center core when assembled, a serated surface around at least a portion of the interior periphery of said axial opening, a plurality of longitudinal arcuate grooves about said bulbous head, each groove to receive a strand element of said outer layer when assembled, at least one slot means extending longitudinally across said wedge through its axis from one end of the wedge;

(c) connector means attachable to said sleeve connector end to force said wedge and assembled strand into said tapered body.

4,464,813
SNAP HOOK

John A. Bakker, Bartlett, and Gilbert Solarz, Des Plaines, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 387,109, Jun. 10, 1982, abandoned.
This application Sep. 26, 1983, Ser. No. 534,935
Int. Cl.³ A44B *13/02*
U.S. Cl. 24—237 2 Claims

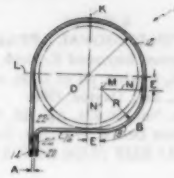


1. In combination with a retainer, an integrally formed snap hook comprising: (a) a bi-ended base portion; (b) an elongated, tapered blade portion; (c) a re-entrant portion, a first end of said base portion being integral with said blade portion through said re-entrant portion thereby providing said snap hook with an aperture intermediate said base portion and said blade portion, said blade portion having at least one pair of opposed sides transverse to and uniformly converging outwardly from said re-entrant portion, said aperture forming an elongated mouth, said mouth having two spaced integrally formed lips at the entrance thereof; and (d) a latch portion, a second end of said base portion being integral with said latch portion thereby providing said snap hook with a corner, a free end of said blade portion and a free end of said latch portion being in distal relation to said base portion, a relaxed condtion for said snap hook being defined when the blade free end is above the latch free end relative to said base portion, a locked condition for said snap hook being defined when said blade free end is positioned beneath said latch free end relative to said base portion, said latch free end and said blade free end being substantially co-planar and of substantially the same width, a first facing surface on said blade free end in opposing relation to a second facing surface on said latching free end, a first plurality of projections formed on said first facing surface and extending towards said latching free end, a second plurality of projections formed on said second facing surface and extending towards said blade free end, said first plurality of projections interfitting between said second plurality of projections while said snap hook is in said locked condition, said retainer including an integral elongated portion having a cross section such that said retainer having said elongated portion within said aperture is freely rotatable about said elongated portion when said snap hook is in said locked condition, said elongated portion having a pair of ends integral therewith and spaced at opposite ends thereof, said elongated portion ends being disposed transverse to and having a relatively greater linear dimension than said aperture, said lips being circumferentially spaced apart and being radially inwardly disposed along an inner surface of said aperture for enabling said elongated portion being transversely urged between and engaging said lips to be snapped into said aperture when said snap hook is in said relaxed condition, movement of said blade free end relative to said latch free end for changing said snap hook from said relaxed condtion to said locked condition causing said lips to come together for radially retaining said elongated portion within said aperture when said snap hook is in said locked condition, said snap hook being maintained in said locked condition by a biased engagement between said blade free end and said latch free end.

4,464,814
CLAMP

Clement A. Senatro, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 28, 1981, Ser. No. 316,027
Int. Cl.³ B65D 63/02
U.S. Cl. 24—279 7 Claims

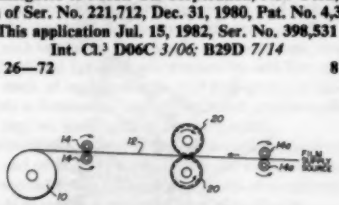


1. A loop type clamp having a relatively circular shaped body in combination with a circular shaped member intended to be supported and the diameter of said relatively circular shaped body being substantially the same as the diameter of the member intended to be supported by said clamp and being formed from a unitary constant width member, a first portion extending tangent to said circular shaped body for accepting a fastener, a second complimentary portion also extending generally tangent to said circular shaped body having a right angle bend disposed in parallel relation to said first portion and spaced therefrom a predetermined distance defining a gap also accepting said fastener, said fastener tightening said clamp to said member intended to be clamped by urging said first portion and said second portion together to close said gap and means for minimizing the stress on said clamp including a bulbous section in the quadrant of the circular shaped body adjacent the said right angle bend extending radially from said member intended to be clamped and said bulbous portion being urged to be in contiguous relationship with said member intended to be clamped when said gap is eliminated, and said unitary constant width member being formed from a resilient metallic material so that when said clamp is in said clamped position the material of said bulbous section imparts a spring load to said clamp.

4,464,815
MULTIDIRECTIONAL ORIENTATION APPARATUS

Peter J. Canterino, Towaco, and Craig E. Allen, Clark, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 221,712, Dec. 31, 1980, Pat. No. 4,374,690.
This application Jul. 15, 1982, Ser. No. 398,531
Int. Cl.³ D06C 3/06; B29D 7/14
U.S. Cl. 26—72 8 Claims



1. An apparatus for multi-directionally orienting the molecular structure within a malleable film comprising:

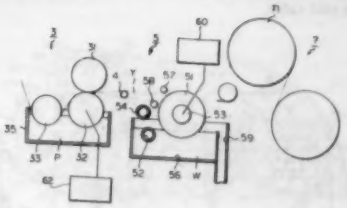
a. at least one pair of oppositely disposed orientation rollers having angularly threaded helical grooves along the entire length of said rollers, said grooves of each roller having generally arcuate edges being configured to provide continuously alternating orientation directions and positioned to receive the threads of said oppositely disposed roller;

b. nips which pull said film through said multi-directional orientation rollers.

4,464,816
SIZED WARP DIVIDER FOR A SIZING MACHINE

Akira Takata, Ishikawa, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Filed Nov. 18, 1980, Ser. No. 207,995
Claims priority, application Japan, Nov. 21, 1978, 54-151404
Int. Cl.³ D06B 3/04
U.S. Cl. 28—183 10 Claims



1. An improved sized warp divider for a sizing machine comprising

a wash bath arranged under the travelling path of sized warps at a position between sizing and dryer stations of said sizing machine, said wash bath containing a liquid,

a transverse rotary shaft arranged over said wash bath and extending in a direction substantially normal to the travelling direction of said sized warps,

a driving system coupled to said rotary shaft,

a plurality of parallel divider discs coaxially mounted on said rotary shaft at substantially equal intervals in an arrangement engageable with said sized warps at a level over said rotary shaft as they pass through spaces defined by said divider discs, said divider discs extending substantially in said travelling direction of said sized warps,

means for generating jet flow of said liquid in a direction substantially opposite to the rotating direction of said divider discs in said wash bath, and

means for applying an air jet to said spaces between said divider discs at a position over the level of said liquid in said wash bath on the upstream side of the area of engagement of said divider discs with said sized warps, said air jet for blowing undesired drops of said liquid off said spaces,

the level of said rotary shaft being chosen so that, as said rotary shaft is driven for operation, the circular section of each divider disc is sequentially placed in said liquid for washing.

4,464,817
OPTICAL WAVEGUIDE TERMINATING APPARATUS

Keith Johnson, Jr., Manheim; Robert A. Long, and William R. Over, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 24, 1982, Ser. No. 381,497
Int. Cl.³ H01R 43/04
U.S. Cl. 29—33 M 8 Claims

1. Apparatus for applying a connector to a fiber optic cable which has the jacket cut and stripped from the end thereof to expose the waveguide fiber, said connector being of the type comprising a plug member having a metal retention sleeve therein, said sleeve serving to grip the jacket of the cable and the plug member to position the fiber positively relative to the end of the plug member, comprises the following:

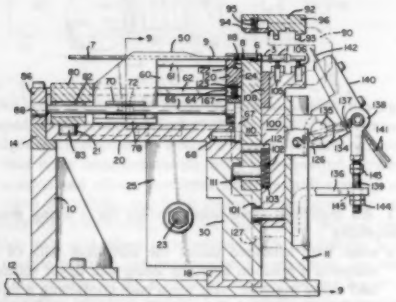
a cable insertion station where said plug member is gripped securely between upper and lower clamping means,

delivery means for delivering said plug member along a delivery path to said insertion station, said plug member being one of a plurality of plug members attached to a carrier strip,

cable clamping and advancing means for clamping said cable and advancing the cut and stripped end of said cable along

a feed path toward said insertion station and through said plug member so that the exposed fiber protrudes therefrom,

guide means on said feed path adjacent to said insertion station, said guide means comprising a secondary cable guide channel profiled to closely accommodate said jacket and a fiber guide channel therebelow profiled to closely accommodate said fiber, said fiber guide channel opening into said secondary cable guide channel, said fiber guide channel being positioned on said feed path prior to clamping said cable,



moving means for moving said guide means after clamping said cable, said moving means being effective to move said fiber guide channel from said feed path after clamping said cable and prior to advancing same, said secondary cable guide channel being positioned on said feed path during initial advance of said cable, whereby,

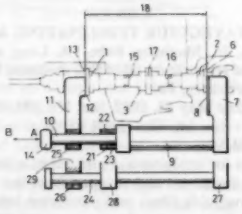
said jacket may be positively positioned relative to said plug member at said insertion station by inserting said fiber in said fiber guide channel with said jacket against said fiber guide channel prior to clamping said cable.

4,464,818

PRESS-FIT DEVICE OF A DRIVE SHAFT INTO A DIFFERENTIAL GEAR OF A FRONT ENGINE-FRONT DRIVE TYPE AUTOMOTIVE VEHICLE

Hazime Kubota, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 9, 1982, Ser. No. 448,060
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **4 Claims**



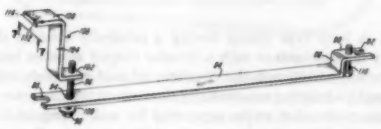
1. A press-fit device of a drive shaft into a differential gear of a front engine-front drive type automotive vehicle comprising, a first mechanism for press-fitting a drive shaft and a Hooke's joint which are oppositely set to both sides of the differential gear and a second mechanism for retaining said first mechanism and adjusting the position of said first mechanism relative to said differential gear; said first mechanism being comprised of a cylinder fixedly provided with a first attachment at its one end and with a rod guide at its other end, a rod adapted to be reciprocatably inserted into said cylinder, being guided by said rod guide and having a stopper at its free end, a second attachment slidably fitted on said rod between said stopper and said rod guide, and a guide shaft provided in parallel relation with said cylinder for guiding the movement of said second attachment; said first and second attachments being adapted to abut against the end surfaces of said Hooke's joint and said drive shaft, respectively.

4,464,819

HINGE PIN REMOVAL APPARATUS

George L. Steck, Dayton; Raymond E. Steck, Miamisburg, and Laurence D. Steck, Dayton, all of Ohio, assignors to Steck Manufacturing Co., Inc., Dayton, Ohio

Continuation of Ser. No. 369,071, Apr. 16, 1982, abandoned.
This application Dec. 6, 1983, Ser. No. 558,691
Int. Cl.³ B23P *19/04*; B66F *3/00*
U.S. Cl. 29—267 **10 Claims**



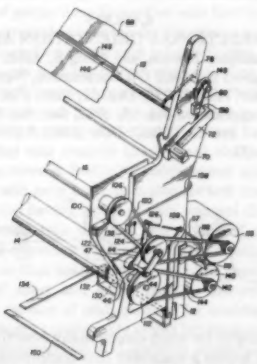
1. A tool for removing an automobile hinge pin of the type comprising a cylindrical shaft having a nose at one end thereof and an enlarged head at the opposite end thereof comprising, in combination, an elongated lever having a first cleft at one end thereof sized as to width to receive the shaft of said hinge pin, a pry bar having respective head and foot portions, adjustable means anchoring said foot portion in pivotal relation to said lever, said head portion having cup means for receiving said nose.

4,464,820

FIXED CLOTH SPEED INSPECTION MACHINE CONVERSION

Robert L. Haines, 17 Wolf Ave., Reisterstown, Md. 21136

Division of Ser. No. 174,467, Aug. 1, 1980, Pat. No. 4,422,223.
This application Sep. 29, 1982, Ser. No. 426,678
Int. Cl.³ B23P *7/00*
U.S. Cl. 29—401.1 **6 Claims**



1. A method of modifying a cloth inspection machine having a motor interconnected to a supply mount and a take-up mount by a two-speed transmission and a variable ratio pulley and belt drive system, and a measuring drum comprising:

substituting a fixed ratio pulley and belt drive system for said transmission and variable ratio pulley and belt drive system;

connecting a tachometer to said measuring drum to sense the speed of said drum;

installing a start and stop switch; and

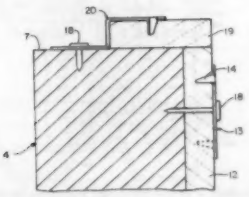
installing a control means responsive to said tachometer and said start and stop switches for varying the speed of said motor after activation of said start switch and in response to said tachometer to maintain the cloth at a substantially constant linear speed.

4,464,821

METHOD OF ATTACHING INSULATION TO A MOLD

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Hudson, N.H.

Filed Apr. 15, 1982, Ser. No. 368,659
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432 **4 Claims**



1. For a two-piece ingot mold of the type comprising a mold cap having first and second ends and a mold body, wherein said cap sits atop said body with said first end facing down when said cap and said body are united to form the complete mold, a method for attaching a liner of insulation boards to the upper interior portion of said ingot mold, said method comprising the steps of:

(1) attaching a plurality of first sheet metal strap members to a first group of said insulation boards;

(2) positioning each of said boards in said first group of insulation boards adjacent one of the interior surfaces of said mold cap;

(3) driving headed nail-like fasteners into said first straps so that the shanks of said fasteners penetrate said first straps, and said insulation boards and said mold cap, while the heads of said fasteners are stopped by said first straps, so that each of said boards in said first group of insulation boards is fastened to said cap and said interior surfaces of said cap are lined with insulation boards;

(4) positioning a second group of insulation boards on said first end of said mold cap so that the insulation boards in said second group of insulation boards abut said insulation boards in said first group of insulation boards;

(5) disposing a plurality of second sheet metal straps about the insulation boards in said second group of insulation boards so that said second straps have portions that overlie and grip said second group of insulation boards and portions that overlie and abut said first end of said cap; and

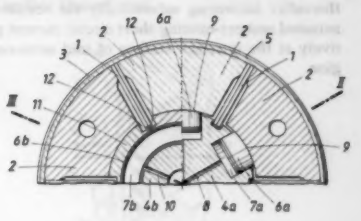
(6) driving at least one headed fastener through each of the portions of said second straps that overlie and abut said first end of said cap so as to fasten each of said insulation boards in said second group of insulation boards to said first end of said cap.

4,464,822

METHOD OF ASSEMBLING VIBRATION-DAMPING, TORSIONALLY ELASTIC CONNECTORS

Peter Pfeifer, Salzburg, Austria, assignor to Dr. Ing. Geislinger & Co., Schwingungstechnik Gesellschaft mbH., Salzburg, Austria

Filed Sep. 29, 1982, Ser. No. 426,697
Claims priority, application Austria, Oct. 12, 1981, 4365/81
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—436 **1 Claim**



1. In a method of assembling a vibration-damping, torsionally elastic connector comprising peripherally spaced apart, radially extending spring elements, spacers disposed between peripherally adjacent spring elements and a clamping ring surrounding said spring elements and spacers and clamping said spring elements between said spacers, wherein the method comprises the step of

elastically expanding said clamping ring to receive said spring elements and to set up in said clamping ring a tangential stress which is sufficient to clamp said spring elements between said spacers,

the improvement consisting of

placing said spacers in said clamping ring when the latter is not expanded,

applying radially outwardly directed pressure to said spacers placed in said clamping ring to expand the latter to such an extent that the tangential stress in said clamping ring is higher than is required to clamp said spring elements between said spacers,

subsequently inserting said spring elements between said spacers when said radially outwardly directed pressure is being applied to said spacers, and

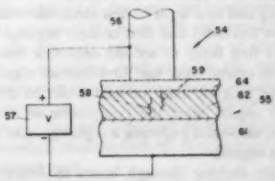
subsequently relieving said radially outwardly directed pressure from said spacers.

4,464,823

METHOD FOR ELIMINATING SHORT AND LATENT SHORT CIRCUIT CURRENT PATHS IN PHOTOVOLTAIC DEVICES

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 435,890, Oct. 21, 1982. This application Aug. 3, 1983, Ser. No. 520,054
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **21 Claims**



1. In a process of making a photovoltaic device of the type

including a semiconductor region overlying a substrate having an interface surface opposite said substrate and a layer of conductive light transmissive material overlying said semiconductor region interface surface, a method of actuating latent defects and then eliminating the actuated as well as pre-existing short circuit current paths extending from said substrate through said semiconductor region to said interface surface comprising:

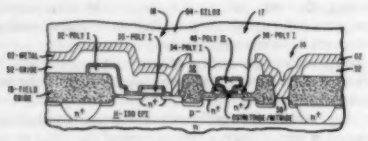
applying an electrical bias to said device to convert said latent defects to actuated short circuit current paths and thereafter increasing substantially the resistivity of said actuated and pre-existing short circuit current paths selectively at the interface surface of said semiconductor region.

4,464,824

EPITAXIAL CONTACT FABRICATION PROCESS

John E. Dickman; Raymond A. Turi, both of Miamisburg, and James A. Topich, Centerville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 18, 1982, Ser. No. 409,193
Int. Cl.³ H01L *21/22*
U.S. Cl. 29—576 E **10 Claims**



1. In a process for fabricating an electrical contact between a region in a semiconductor wafer and a metallic interconnect layer during the course of fabricating an integrated circuit which generally includes the formation of active and field oxide regions, the creation of field effect devices using patterned formations of a gate dielectric layer and electrode material layers, the pattern doping of electrode and wafer layer materials, and the formation of electrical connections to said field effect devices, wherein the improvement comprises the selectively introduced steps of:

delineating said wafer to define a first contact region at a position electrically isolated from the source/drain regions of field effect devices;

forming the field oxide while protecting said contact regions;

forming a layer of first, gate dielectric material on said wafer to extend over said contact region;

forming a first layer of first electrode material on said wafer to extend over said contact region;

delineating said first layer of first electrode material to retain the area covering said first contact region;

forming a first layer of second dielectric material on said wafer to extend over said first contact region;

delineating an etch mask on said wafer to define said first contact region after the completion of the field effect devices, said mask exposing a region greater than said first contact region;

sequentially etching through layers of dielectric and electrode materials; and

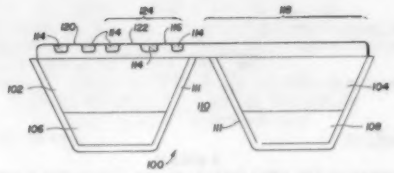
forming a layer of metallic material on said wafer to extend over said contact region.

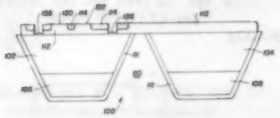
4,464,825

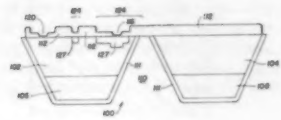
PROCESS FOR FABRICATION OF HIGH-SPEED RADIATION HARD BIPOLAR SEMICONDUCTOR DEVICES

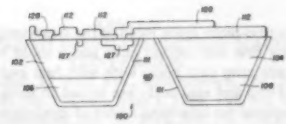
Kenneth A. Ports, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 17, 1983, Ser. No. 467,295
Int. Cl.³ H01L *21/90, 21/225*
U.S. Cl. 29—577 C **12 Claims**









12. A process for fabrication of a radiation hardened bipolar device, comprising the steps of:

forming a first protective layer on a surface of a semiconductor substrate of single crystal material;

forming a layer of silicon nitride over said first protective layer;

patterning and removing said silicon nitride in those areas overlaying said substrate wherein a collector contact, and emitter are to be formed, leaving said silicon nitride overlaying said substrate (a) in regions adjacent those wherein said emitter is to be formed and (b) in regions adjacent those wherein said collector contact is to be formed;

increasing the thickness of said first protective layer in regions where said silicon nitride has been removed;

removing the portions of said first protective layer overlaying said substrate in regions wherein said collector contact and emitter are to be formed using said patterned silicon nitride layer as a self-alignment mask;

removing all remaining silicon nitride whereby contoured apertures in said first protective layer are formed over said collector contact and emitter regions;

forming a mask to shield apertures in said first protective layer except over said base area;

diffusing a first dopant of a first conductivity type to form a base in said substrate;

thereafter depositing a source of a second dopant of a second conductivity type in said contoured inserts; and

transferring said second dopant from said source into said

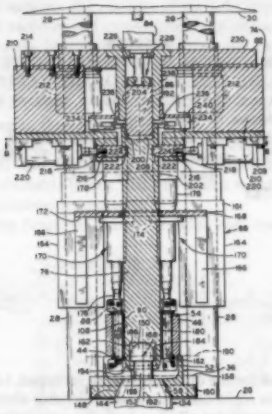
substrate by high temperature diffusion to form said collector contact and emitter.

4,464,826

METHOD AND APPARATUS FOR ALIGNING LAMINATIONS IN A STATOR CORE

Eugene C. Bair, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 26, 1982, Ser. No. 401,634
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—593 **59 Claims**



1. A method of aligning laminations in a stator core wherein each lamination has an opening therein comprising the steps: providing a carrier having at least one reference surface defining a reference plane; arranging the laminations in a stacked relation with one end of the lamination stack supported on the carrier reference surface such that the openings are aligned to form a rotor accommodating bore; inserting an arbor into the bore; anchoring the arbor at a first location on the arbor near the end of the stack that is supported on the carrier reference surface; anchoring the arbor at a second location on the arbor beyond the end of the stack opposite the end supported on the carrier reference surface, the arbor being perpendicular to the reference plane and having a very close clearance with the rotor accommodating bore of the stack to thereby orient the bore perpendicularly to the reference plane, the anchoring of the arbor at the second location being independent of the anchoring of the arbor at the first location; compressing the laminations together and securing the laminations to the carrier reference surface while the arbor is anchored perpendicularly to the reference plane.

4,464,827

METHOD OF INTERCONNECTING CELLS IN BATTERIES

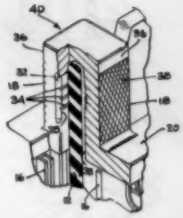
Jasper E. Hardin, Redlands, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Mar. 7, 1983, Ser. No. 472,477
Int. Cl.³ H01M *6/00*
U.S. Cl. 29—623.2 **5 Claims**

1. In a method of interconnecting cells of a battery including the steps of providing a battery housing having intersecting vertical barrier walls which form multiple cavities within the housing, each cavity having an opening defined by top surfaces of the barrier walls; mounting each cell within a respective cavity; forming a conductive link which straddles the top of one barrier wall and electrically interconnects adjacent cells; providing a cover having intersecting recesses corresponding to the intersecting barrier walls of the housing; providing an adhesive; and bonding the top surfaces of the barrier walls, including an outer surface of the link straddling the one barrier wall, within the recesses of the cover using the adhesive, the improvement comprising:

as part of the step of forming a link, forming grooves along an inner surface of the link adjacent the one barrier wall, where each groove is substantially parallel to the top surface of said wall;

as further part of the step of forming a link, forming multiple indentations in the outer surface of the link opposite to the inner surface thereof; and



applying, prior to the step of bonding the top surfaces of the walls within the recesses of the cover, a liquid sealant to the portion of the link straddling the one barrier wall, whereby the sealant flows into the grooves under the force of capillary action and provides a gas tight seal in the space between the inner surface of the link and the one barrier wall, and whereby the sealant flows into the multiple indentations and adheres to the outer surface of the link and provides a gas tight seal between the outer surface of the link and the adhesive.

4,464,828

METHOD OF ASSEMBLING A CONTROL DEVICE

Donald H. Stoll, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 244,021, Mar. 16, 1981, Pat. No. 4,410,776.
This application Sep. 21, 1982, Ser. No. 420,986
Int. Cl.³ H01H *65/00*
U.S. Cl. 29—622 **15 Claims**

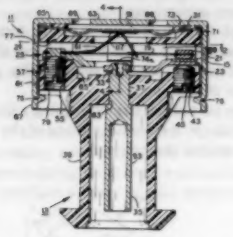
3. A method of assembling a control device having a dielectric base, a pair of adjusting screws threadedly received in the base, a terminal having an extension with a first deformable section, a first contact on the terminal extension, an electrical conductive cover, a resilient switch element having a second contact thereon, actuating means adapted for operating the resilient switch element to effect making and breaking of the second contact thereon and the first contact on the terminal extension, an electrical conductive supporting member including a bridge section having a pair of generally opposite extending arms with a pair of second deformable sections therein and with the resilient switch element secured to the bridge section so as to extend therefrom generally between the opposite extending arms, the method comprising the steps of:

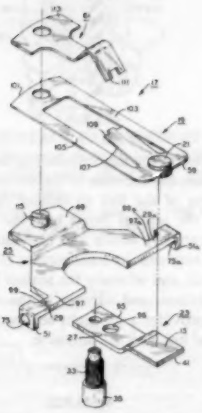
securing the terminal to the base and overlaying one of the adjusting screws in the base with the terminal extension;

disposing the opposite extending arms of the supporting member in mounting relation with the base with the bridge section of the supporting means arranged generally in overlaying relation with the other of the adjusting screws in the base and engaging the second contact on the resilient switch element with the first contact on the terminal extension; and

associating the cover and the base in assembly relation so as to enclose therebetween the actuating means, the resilient switch element, the supporting member and the terminal

extension with the actuating means engaging the resilient switch element and interconnecting the cover in electrical





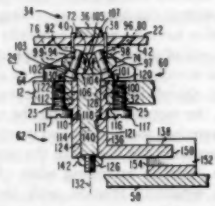
conductive relation with at least one of the opposite extending arms of the supporting member.

4,464,829

COMPONENT LEAD BENDING APPARATUS

George J. Whitley, Philadelphia, Pa., and Martin Rayl, Lawrenceville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 25, 1983, Ser. No. 469,737
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—741 **6 Claims**



1. Apparatus for bending the leads of a component projecting from a printed circuit board comprising:

a support structure;

a component lead processing assembly including a lead bending member for bending the leads of a component projecting from the printed circuit board;

means secured to the support structure for aligning a printed circuit board relative to said processing assembly;

said assembly comprising a lead bending member rotatable about a first axis and rotatable into said projecting leads and including cam follower means, cam means rotatable about a second axis normal to said first axis, said cam means having a cam slot that extends outward non-radially from said second axis, said cam follower means being located in said cam slot and responsive to the rotation of said slot about said second axis for rotating said bending member about said first axis; and

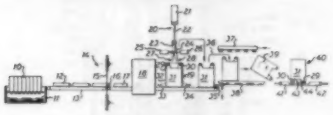
drive means coupled to said cam means for rotating said cam means about said second axis.

4,464,830

PROCESS FOR THE DISASSEMBLING OF SCRAP ALKALINE ELECTRIC STORAGE BATTERIES

Erik M. Carlsson, Oskarshamn, Sweden, assignor to SAB Nife AB, Landskrona, Sweden

Filed Sep. 21, 1982, Ser. No. 420,923
Claims priority, application Sweden, Sep. 24, 1981, 8105662
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—763 **5 Claims**



1. A process for the disassembling of scrapped, i.e. worn out, damaged or in some other way unserviceable electric storage batteries, in particular alkaline batteries, consisting of a prismatic cell container with sets of positive and negative plates, each secured to the next by means of a connecting strap, from which terminal posts project through a cover on the upper part of the cell container, for the purpose after having emptied any free electrolyte from the cell container of recovering the materials making up the battery, characterized by the following steps performed in sequence in a mechanized installation

(a) removing the upper part of the cell container with its terminal posts by sawing off the top of the container preferably immediately above the connecting straps which secure the sets of plates to each other, so as to produce an opening;

(b) withdrawing the sets of plates through said opening by means of a mechanical device at the same time as the container is gripped and held fast in a pre-determined position by means of clamping devices;

(c) washing the withdrawn sets of plates clean of any residual deposits and remaining electrolyte by means of a rinsing liquid;

(d) bringing into engagement respectively with the sets of negative plates and the sets of positive plates hook-shaped drawing devices, and

(e) moving the hook-shaped drawing devices apart to separate the sets of plates from each other.

4,464,831

METHOD AND DEVICE FOR FABRICATING INSULATED JOINTS FOR RAILROAD TRACKS

Lothar Weber, Hörner Weg; Friedhelm Wojtek, Zum Ortenbrink, and Horst Schwarzbach, Feldkamp, all of Fed. Rep. of Germany, assignors to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,420
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104801
Int. Cl.³ H01R *43/00*; B23P *19/00*
U.S. Cl. 29—825 **15 Claims**

1. A method of fabricating an insulated joint between a pair

of end abutting rail sections of a railroad track, comprising the steps of:

providing an opposed pair of guide rods lying in a plane parallel to a plane of the top surface of rail sections and secured onto support means

providing at least first and second bores in each of a pair of fishplates and at least first and second bores in confronting ends of each of the rail sections, the rail section bores and the fishplate bores being in alignment with one another;

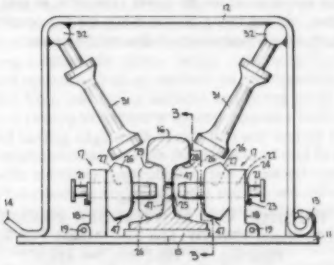
suspending the fishplates, by extending the opposed pair of rods through said second bores thereof, at the joint at a position spaced outwardly from opposed fish surfaces of the rail sections, the surfaces of the fishplates confronting the fish surfaces and corresponding in shape thereto;

simultaneously heating the rail sections and the fishplates at said position to a predetermined temperature;

disposing a layer of insulating material between confronting ends of the rail sections, the layer having a shape corresponding to the rail profile;

disposing a pair of cuffs respectively between said fishplates and said fish surfaces, the cuffs comprising fabric and heat-activatable plastic material which is activated at said predetermined temperature;

shifting the fishplates along the guide rods toward one another against the fish surfaces with the cuffs lying therebetween;



inserting first sleeves of insulating material into said first aligned bores; and

extending fasteners through said sleeves for securing the fishplates to the rail sections.

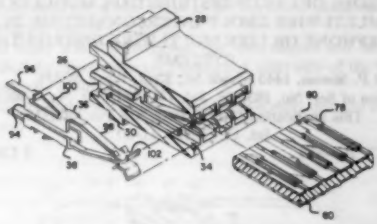
4. A device for fabricating an insulated joint between a pair of ends abutting rail sections of a railway track, comprising a base plate adapted for supporting the rail sections, a pair of spaced apart support assemblies mounted on said plate at the joint, said assemblies comprising upstanding supports and elongated guide rods fixedly mounted thereon, said rods lying parallel to said base plate and having terminal ends respectively spaced outwardly of the sides of the rail sections, said rods being coaxial and being spaced above said base plate a predetermined distance adapted for aligning said rods with a bore located in one of the rail sections, said rods being adapted for suspending fishplates having bores therein through which said rods are capable of extending so that the fishplates may be guided along said rods against the fish surfaces of the rail sections, cuffs of fabric and heat-activatable material adapted to be disposed between the fish surfaces and the fishplates, a hood mounted on said base plate and overlying said support assemblies, heater members mounted on said hood for diverting heat toward said cuffs for heat activating same.

4,464,832

METHOD OF MAKING CARTRIDGE CONNECTOR SYSTEM

John C. Asick, Harrisburg; Leon T. Ritchie, Mechanicsburg, and Dale R. Zell, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 14, 1981, Ser. No. 263,794
Int. Cl.³ H05K *3/34*
U.S. Cl. 29—839 **9 Claims**



1. A method for manufacturing a circuit assembly comprising the steps of:

forming a planar member of rigid insulative material having an array of grooves on at least one major surface thereof and a plurality of apertures in said grooves extending through said member,

forming at least one array of conductors having a like pattern as said array of grooves, each conductor having at least one H-shaped slit therein aligned to overlie a respective aperture,

inserting said array of conductors into said array of grooves, and

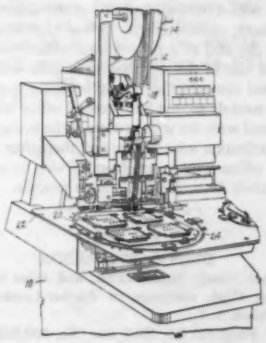
inserting leads of a plurality of components into respective H-shaped slits of said circuitry and said apertures.

4,464,833

VARIABLE RATE CONTROL LOGIC FOR COMPONENT INSERTION MACHINE

Robert J. Duncan, Magnolia, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 1, 1982, Ser. No. 413,873
Int. Cl.³ B23P *21/00*; B23Q *15/00*
U.S. Cl. 29—718 **15 Claims**



1. In an electrical component insertion machine wherein electrical components are selectively inserted into a receiving medium positioned beneath a component insertion head, a system for controlling the rate at which the electrical components are inserted, said system comprising:

means for verifying that the receiving medium has reached a

position relative to a final commanded position whereby only a finite, predetermined distance remains to be traveled by the receiving medium in at least one direction; and

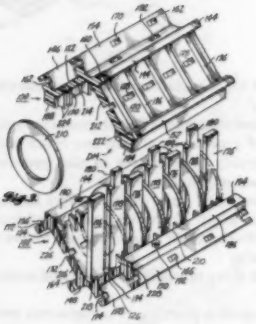
means, responsive to the verification, for initiating an insertion stroke by the component insertion head during the time in which the finite predetermined distance is being achieved.

4,464,834

METHODS OF USE OF DISTRIBUTION MODULES FOR MULTI-WIRE GROUP INTERCONNECTION IN TELEPHONE OR LIKE MULTI-WIRE DISTRIBUTION SYSTEMS

Alfred P. Simms, 1443 Maple St., Kent, Wash. 98031

Division of Ser. No. 283,202, Jul. 14, 1981, Pat. No. 4,400,047.
This application Dec. 6, 1982, Ser. No. 447,256
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—854 **8 Claims**



1. The method of transferring service from one central office multi-wire group to another in a multi-wire communication distribution system without interruption of field service, said method comprising: establishing field service through a prong type multi-wire bridging module terminating the end of a first central office wire group by plug-in connection thereof through one side of a distribution module with at least three slotted sides, to another side of which is also connected a prong type bridging module terminating the end of a field distribution wire group, with a third slotted side of the distribution module being left blank; connecting the prong type bridging module terminating the end of a new central office wire group to a blank slotted side of the distribution module without removal of the original central office group bridging module from the distribution module so that both central office wire groups are interconnected with the wire groups of the bridging module of the field distribution wire group; and thereafter removing the first central office wire group from service by unplugging its bridging module from the distribution module.

4,464,835

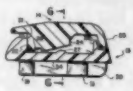
DISPOSABLE RAZOR

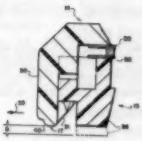
Peter Bowman, Sandy Hook, Conn., and Allan S. Frieze, Salt Lake City, Utah, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 21, 1982, Ser. No. 400,558
Int. Cl.³ B26B *21/06*
U.S. Cl. 30—84 **2 Claims**

1. In a disposable substantially plastic razor having at least one cutting edge of the type having a permanently attached cover making an interlocking connection with the razor body and manually movable to and fro from a first position in which the edge is protected to a second position in which the edge is exposed properly for wet shaving, the improvement comprising:

an exterior stop means on the razor for retaining the cover in the first position to prevent inadvertent movement of the





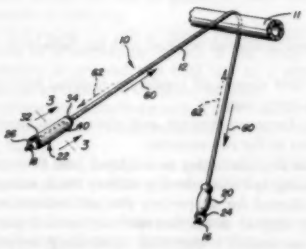
cover during transit in commerce, said stop means defining a lug having a ramp cooperates with a skirt portion of the cover to retain the cover releasably in said first position, said lug being disposed in a medial position relative to the razor body and relative to the cover.

4,464,836

FRICTION SAW AND HANDLE ASSEMBLY

Robert E. Hissa, 9500 SW. 51st Ter., Miami, Fla. 33165

Filed Sep. 15, 1982, Ser. No. 418,377
Int. Cl.³ B26B *27/00*
U.S. Cl. 30—92 **3 Claims**

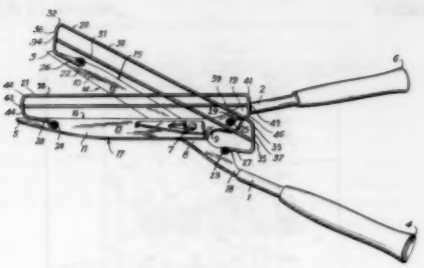


1. A light weight flexible saw comprising a textile cord having a generally abrasive external surface between longitudinally opposite knotted ends, and handle elements on the textile cord in abutment with said knotted ends, said textile cord being made of Nylon filaments capable of cutting thermosetting plastic materials in frictional contact therewith by sawing, the textile cord being reciprocated as a saw blade by means of the handle element, at least one of the handle elements having a molded elongated body having a radial slot therein through which the textile cord is received in spaced relation to the knotted ends, said one of the handle elements including a resilient clip enclosing the elongated body to prevent disassembly of the textile cord through the radial slot.

4,464,837
GRIPPER DEVICE FOR HEDGE AND SHRUBBERY TRIMMER SHEARS

Willis J. Amstutz, 307 E. Monroe St., Pandora, Ohio 45877

Filed Sep. 29, 1982, Ser. No. 427,502
Int. Cl.³ B26B 13/22
U.S. Cl. 30—134 4 Claims



1. A gripper device for hedge and shrubbery trimmer shears having first and second handle members each having spaced opposite first and second ends, said handle members being pivotally affixed to each other in pivot areas intermediate the first and second ends thereof, a first blade extending at the first end of the first handle member and a second blade extending at the first end of the second handle member, said first and second blades having substantially planar facing surfaces facing each other, spaced opposite backing surfaces on the opposite sides of said blades from said facing surfaces and facing away from each other, a cutting edge and a spaced opposite back edge opposite said cutting edge, each of said first and second blades having a first end coincident with the first end of said first and second handle members, respectively, and a spaced opposite second end intermediate said pivot areas and the second end of said first and second handle members, respectively, said gripper device comprising

a first substantially rigid wire member removably affixed to the facing surface of said first blade and extending in spaced substantially parallel relation to the length of said first blade, said first wire member having a first end affixed to the facing surface of said first blade in proximity with the first end of said first blade and a spaced opposite second end affixed to said facing surface of said first blade in proximity with the second end of said first blade; and

a second substantially rigid wire member removable affixed to the backing surface of said second blade and extending in spaced substantially parallel relation to the length of said second blade, said second wire member having a first end affixed to the backing surface of said second blade in proximity with the first end of said second blade and a spaced opposite second end affixed to said backing surface of said second blade in proximity with the second end of said second blade, said wire members permitting normal interaction of said blades in cutting material and retaining severed material on said blades until said severed material is manually removed.

4,464,838
KNIFE FOR PEELING OF TROPICAL FRUITS

Werner Girrbach, and Ingrid Girrbach, both of Schönenberger Strasse 22, D-7136 Ötisheim, Fed. Rep. of Germany

Filed Feb. 2, 1982, Ser. No. 345,124
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 8103836[U]
Int. Cl.³ A47J 43/28
U.S. Cl. 30—149 3 Claims

1. In a knife for the peeling of tropical fruits having a handle and a shank arranged in a linear direction in the plane of the handle and a blade particularly at least substantially planar, said blade having a semicircular-shaped edge, and said semicircular-shaped edge forming a blunt cutter, the improvement wherein

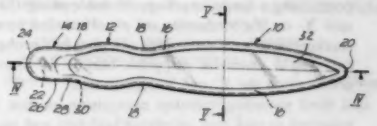
the blade is deepened flat, dish-shaped, and said edge is a slightly raised edge forming an outer cutting edge,

and wherein the blade extends in the linear direction of the handle and shank arrangement,

the knife has narrow sides, and the shank is wider than the blade and the knife is formed with indentations as a transition from the wider shank to the narrower blade on each narrow side of the knife,

said blade which is deepened flat, dish-shaped and has said slightly raised edge on a deepened wide side of the blade thereby defines a recess,

said recess extends adjacent the narrow sides into the shank, and



the indentations at the deepened wide side each have a slightly raised, sharpened edge which transfers smoothly into the raised edge of the blade such that a continuous outer cutting edge exists extending from said outer cutting edge of the blade into the shank,

the knife has wide sides, and

the shank and handle are formed:

with one continuous rigidifying recess on one wide side of said knife constituting a side in common with said deepened wide side of said blade,

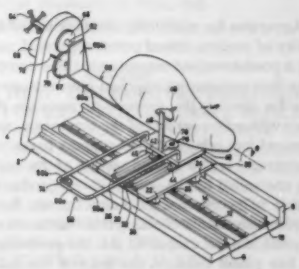
said rigidifying recess is adjacent and slightly raised, sharpened edge and extends from said first-mentioned recess of the blade adjacent the narrow sides of the knife from said blade to a free end of the handle, and

with a central recess on the other wide side.

4,464,839
THREE DIMENSIONAL DIGITIZER FOR DIGITIZING THE SURFACE CONTOUR OF A SOLID BODY

Yaacov Sadeh, Beersheva, Israel, assignor to Beta Engineering and Development Ltd., Beer Sheva, Israel

Filed Jul. 22, 1982, Ser. No. 400,714
Claims priority, application Israel, Sep. 16, 1981, 63856
Int. Cl.³ G01B 7/28
U.S. Cl. 33—1 M 14 Claims



1. A three-dimensional digitizer for digitizing the surface contour of a solid body, comprising:

a base for supporting the solid body;

a probe supported on the base for contacting the solid body at a plurality of sample points;

a first mounting member mounting the probe for movement in a linerar direction along the X-coordinate with respect to the base and the solid body when supported thereon, to indicate the X-coordinate of each sample point;

a second mounting member mounting the probe for movement in a linear direction along the Y-coordinate with respect to the base and the solid body, when supported thereon, to indicate the Y-coordinate of each sample point;

and a third mounting member for mounting the solid body for movement in a rotary direction with respect to the probe to indicate the θ-angular coordinate of the sample point;

said first mounting member comprising a first carriage movably mounted along one of said X- or Y-coordinates on a rail carried by the base, and said second mounting member comprising a second carriage movable along the other of said X- or Y-coordinates on a rail carried by said first carriage; said second carriage carrying said probe and also carrying a manually grippable handle for moving said probe along the X- and Y-coordinates;

said third mounting member comprising an arm rotatably mounted to said base overlying said first and second carriages and adapted to support said solid body, said arm being coupled to a second manually-grippable handle for rotating same, and the solid body when carried thereby, about one of said coordinates.

4,464,840

MEASURING THICKNESS

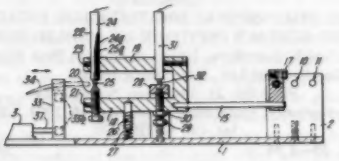
David E. Newland, Beck, Malthouse La., Burn Bridge, Harrogate, N. Yorks., England HG3 1PD

Filed Nov. 3, 1982, Ser. No. 438,778

Claims priority, application United Kingdom, Nov. 4, 1981, 8133293

Int. Cl.³ G01B 7/06, 7/28

U.S. Cl. 33—147 E **7 Claims**



1. Apparatus for measuring the thickness of a workpiece at a plurality of predetermined points separated one from another along a predetermined measurement line comprising a caliper having first and second opposed jaws mounted on a support, means for biasing the support to maintain the first jaw in contact with a first surface of the workpiece, means for biasing the second jaw relative to the support to maintain the second jaw in contact with a second surface of the workpiece, a transducer controlled by the second jaw to produce a signal representative of workpiece thickness, means for mounting the workpiece, means for effecting relative movement between the workpiece and the caliper so that the predetermined measurement line passes between the jaws of the caliper, means for sampling the output signal from the transducer as the predetermined points pass between the jaws of the caliper, and means for processing the sample signals to provide thickness measurements at the predetermined points.

4,464,841

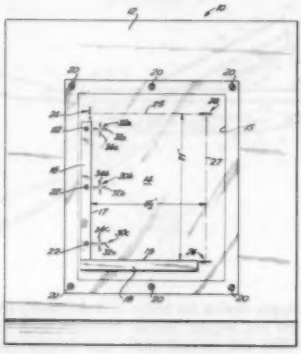
DIMENSION BOARD FOR CUTSIZE PAPER

Johnny A. McCay, Hartselle; Arthur H. Owens, and Fred N. Jackson, both of Florence, all of Ala., assignors to Champion International Corporation, Stamford, Conn.

Filed May 5, 1982, Ser. No. 374,993

Int. Cl.³ G01B 5/16

U.S. Cl. 33—174 R **4 Claims**



1. A device for gauging the dimensions of a sheet of paper, said device comprising:

(a) a planar support surface;

(b) means on said support surface operable to form intersecting first and second abutment surfaces extending perpendicular to each other, said abutment surfaces being operable to engage adjacent edges of a sheet of paper to set the position of a sheet of paper on the support surface;

(c) a first set of gauge lines disposed on said support surface, said first set of gauge lines including a first centerline elongated in the direction of said first abutment surface and spaced apart therefrom a first predetermined distance, and said first set of gauge lines further including a plurality of secondary lines elongated in the direction of said first abutment surface and disposed on both sides of said first centerline, said first predetermined distance being equal to a desired distance between a first pair of opposite edges of the sheet of paper;

(d) a second set of gauge lines disposed on said support surface, said second set of gauge lines including a second centerline elongated in the direction of said second abutment surface and spaced apart therefrom a second predetermined distance, and said second set of gauge lines further including a plurality of secondary lines elongated in the direction of said second abutment surface and disposed on both sides of said second centerline, said second predetermined distance being equal to a desired distance between a second pair of opposite edges of the sheet of paper;

(e) a plurality of sets of hole gauge lines disposed in alignment and spaced apart from each other on said support surface, each set of said hole gauge lines comprising a first array of lines parallel to said first abutment surface and disposed on both sides of a center point, and a second array of lines parallel to said second abutment surface and disposed on both sides of said center point, said center-points being spaced apart from each other by distances equal to desired distances between centers of a row of holes formed in the sheet of paper;

(f) said first and second sets of gauge lines and said sets of hole gauge lines being displayed in a manner which clearly contrasts with any other material displayed on said support surface.

4,464,842

SUSPENSION SYSTEMS FOR FLUX GATE COMPASSES

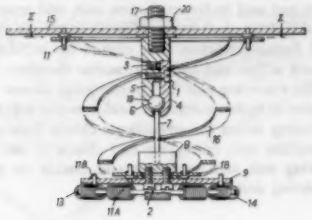
Michael J. Fish, St. Martin D'Hers Grenoble, France, and Michael J. Gill, Milford-On-Sea, England, assignors to Brookes & Gatehouse Limited, Lymington, England

Filed Aug. 2, 1982, Ser. No. 404,086

Claims priority, application United Kingdom, Aug. 3, 1981, 8123726

Int. Cl.³ G01C *17/28*

U.S. Cl. 33—344 **17 Claims**



1. A suspension system for suspending a directionally indicative or sensitive device from a relatively fixed structure which can be subject to tilt about orthogonal horizontal axes and to twist about a vertical axis; the suspension system comprising:

a substantially spherically-symmetrical mechanical coupling, which permits relative tilt and twist, interconnecting said relatively fixed structure with said device for supporting the device beneath the relatively fixed structure; and

alignment means having a spiral or zig-zag configuration;

said alignment means having opposite ends, one of said ends being coupled to the fixed structure and the other of said ends being coupled to the device, whereby the device is caused by said alignment means to twist about the vertical axis so as to follow twisting motion of the fixed structure.

4,464,843

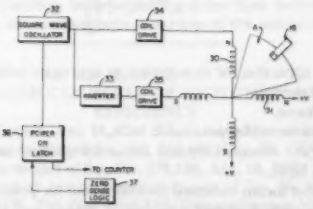
ANGULAR MEASUREMENT APPARATUS WITH REFERENCING SYSTEM

Melvin G. Kramer, Riverton, Wyo., assignor to The Brunton Company, Riverton, Wyo.

Filed Nov. 26, 1982, Ser. No. 444,670

Int. Cl.³ G01C *17/26*

U.S. Cl. 33—363 K **11 Claims**



1. In a compass wherein a rotatable scale has a reference position index and a code strip provided with indicia representing degrees of angular displacement away from said reference position index, a reference position sensor for generating a signal in response to alignment of said reference position sensor with said reference position index, and magnetic means operative to align said scale with magnetic north, the improvement comprising:

a pair of electrical referencing members disposed on opposite sides of said magnetic means and drive circuit means for alternately energizing said referencing members, said magnetic means responsive to alternate energization of each reference member to advance said reference position index across said reference position sensor, and means deenergizing said drive circuit means in response to said reference position index being advanced into alignment with said reference position sensor whereupon said scale is aligned by said magnetic means with the earth's magnetic field, said referencing members defined by electrical coils wrapped diametrically around the exterior of said housing and disposed at an included angle of substantially 90° with respect to one another, said coils having sufficient current supplied thereto by said drive means to rotate said magnetic means within 45° of the magnetic axis of each of said coils.

4,464,844

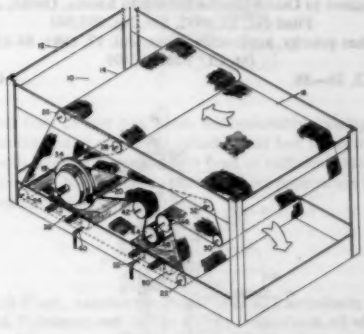
METHOD FOR DEWATERING AGGREGATE SOLID SUBSTRATES BY MISCIBLE LIQUID DISPLACEMENT

Leland C. Dickey, and Maya Tayter, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Apr. 11, 1983, Ser. No. 483,924

Int. Cl.³ F26B *3/00, 19/00, 13/26, 13/30*

U.S. Cl. 34—9 **4 Claims**



1. A method for dewatering an aggregate solid substrate which comprises:

(a) placing said substrate between two moving permeable belts,

(b) compressing said substrate between said belts,

(c) contacting said substrate with a displacement fluid while still compressed between said belts such that said substrate and said fluid remain in plug flow while in contact,

(d) removing relatively pure water which is expressed by said displacement fluid,

(e) further compressing said substrate between said belts to remove excess displacement fluid, and

(f) collecting the dewatered substrate.

4,464,845

METHOD OF HEAT- AND MOISTURE TREATMENT OF ARTICLES, FOR EXAMPLE, CONCRETE ARTICLES, AND AN APPARATUS FOR ACCOMPLISHING SAME

Vilya V. Bubelo, ulitsa Avdeeva, 4, kv. 110; Vitaly M. Timofeev, ulitsa Avdeeva, 67, kv. 4; Vladimir I. Ganzhara, ulitsa Avdeeva, 4, kv. 77, all of Tselinograd, and Raisa M. Froze, Chelyabinskaya ulitsa, 27, kv. 128, Moscow, all of U.S.S.R.

Division of Ser. No. 198,923, Oct. 20, 1980, Pat. No. 4,362,505.

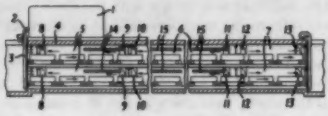
This application Sep. 13, 1982, Ser. No. 417,402

Int. Cl.³ F26B *7/00, 9/12;* F27B *9/04*

U.S. Cl. 34—18 **1 Claim**

1. A method of heat-and-moisture treatment of concrete articles comprising, pre-drying concrete articles by blowing of air thereon at a temperature of 70° C. to 100° C., isothermally

treating the pre-dried concrete articles with a steam-air mixture for a period of 1–6 hours at a temperature and humidity gradually increased up to the permissible values corresponding to the given type of concrete articles being treated, subsequently immediately treating the concrete articles for a period



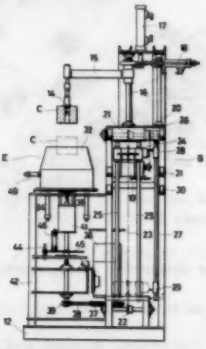
of 2 to 6 hours with an air-steam mixture at a temperature of 65° to 95° C. and a relative humidity close to 100%, and then immediately cooling the concrete articles by blowing thereon slightly heated cooling air for a period of 0.3 to 1.5 hours and at a relative humidity of 35–95%.

4,464,846

HYDRO-EXTRACTING APPARATUS FOR CHEESES OF YARN

Takeji Itoh, Aichi, and Nobutaka Ono, Hyogo, both of Japan, assignors to Osaka Bobbin Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1982, Ser. No. 397,941
Claims priority, application Japan, Jul. 17, 1981, 56-112738
Int. Cl.³ F26B *11/08*
U.S. Cl. 34—58 **6 Claims**



1. A hydro-extracting apparatus for drying cheeses of yarn by intermittently and consecutively hydro-extracting the cheeses, comprising:

a rotary table having means for supporting a plurality of spindles in upright, spaced-apart relationship thereon, the cheeses to undergo hydro-extraction being vertically mountable on the spindles, and means for effecting intermittent stepwise rotation of said table to thereby move said spindles in succession through a series of stations including an unloading station;

a vertically movable lifting device at said unloading station for lifting the cheeses, one by one, along the spindle at said unloading station to an elevated position thereon, and a movable arm mechanism movable laterally between said unloading station and a hydro-extraction station, cheese-holding means mounted on said arm mechanism for holding a cheese after it has been raised to the elevated position on a spindle at said unloading station, transferring the cheese from said unloading station to said hydro-extraction station and for releasing the cheese when said arm mechanism is at said hydro-extraction station;

a centrifugal hydro-extractor located at said hydro-extraction station and laterally spaced from said lifting device so that a cheese lifted from the spindle at said unloading station can be held, conveyed to and loaded into said hydro-extractor by said arm mechanism, said hydro-extractor including a hydro-extraction unit having a chamber into which the cheese is loaded by said arm mechanism, a driving mechanism, a flexible drive shaft which connects said driving mechanism to said hydro-extraction unit, said driving mechanism and said flexible drive shaft being effective to rotate said hydro-extraction unit to effect centrifugal hydro-extraction of the cheese, and a spring which resiliently engages said driving mechanism and said hydro-extraction unit, said spring and said flexible drive shaft being effective to absorb vibrations of said hydro-extraction unit caused by imbalance of the cheese within said hydro-extraction chamber; and

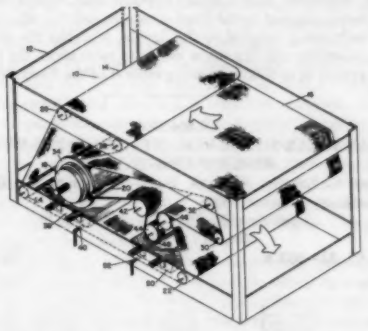
a cheese receiving unit for receiving the cheese upon completion of hydro-extraction, said movable arm mechanism including means for unloading a cheese from said hydro-extraction unit, conveying said cheese to said cheese receiving unit and unloading said cheese on said cheese receiving unit.

4,464,847

MACHINE FOR DEWATERING AGGREGATE SOLID SUBSTRATES BY MISCIBLE LIQUID DISPLACEMENT

Leland C. Dickey, and Maya Tayter, both of Omaha, Nebr., assignors to InterNorth, Inc., Omaha, Nebr.

Filed Apr. 11, 1983, Ser. No. 483,925
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—71 **4 Claims**



1. An apparatus for dewatering an aggregate solid substrate which comprises:

(a) a frame,

(b) two movable, permeable belts,

(c) means mounted on said frame for guiding and moving said belts,

(d) roller means mounted on said frame for positioning said belts such that said substrate is guided and compressed between them,

(e) means for contacting said substrate with a displacement fluid while it is compressed between said belts such that said fluid collects between the top belt and said roller means before permeating through the top belt and contacting said substrate,

(f) means for removing relatively pure water which is expressed by said fluid through the bottom belt,

(g) means for further compressing said substrate to remove excess displacement fluid, and

(h) means for removing the dewatered substrate from the apparatus.

4,464,848

PROCESS FOR TREATING WOOD

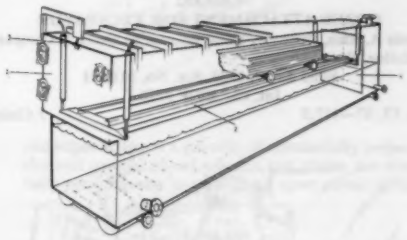
Magnus F. O. Estberg, Rimbo, Sweden, assignor to KenoGard AB, Sweden

Division of Ser. No. 311,409, Oct. 14, 1981, Pat. No. 4,407,076. This application Sep. 22, 1982, Ser. No. 421,249

Claims priority, application Sweden, Oct. 17, 1980, 8007297

Int. Cl.³ F26B *13/30*; C21D *1/62*

U.S. Cl. 34—92 **5 Claims**



1. An autoclave for drying wood and other cellulose-based material by immersion in a high-boiling liquid media, said autoclave having wall means and including:

(a) a vertically extending partition wall extending from one side of the autoclave to the other and located adjacent one end of said autoclave, which partition separates the autoclave into a major space and a minor space,

(b) an opening through the wall means of said autoclave into said major space for the introduction of the material to be dried into said major space,

(c) a device in said autoclave for lowering the material introduced through (b) from the upper portion of said major space to the lower portion of said major space, so that it will be immersed in high-boiling liquid and for lifting such material from the lower portion of said major space to the upper portion of said major space, so that it will no longer be immersed in said high boiling liquid,

(d) at least one conduit extending through the wall means of said autoclave for the introduction of high-boiling liquid into said autoclave,

(e) a connection extending through the wall means of said autoclave and connecting said autoclave to a vacuum source,

(f) said partition wall permitting liquid flow between said major and minor spaces at the bottom of the autoclave, and

(g) said partition wall permitting foam flow between said major and minor spaces at the top of the autoclave.

4,464,849

HEATED CAN ROLLS OF HIGH THERMAL EFFICIENCY

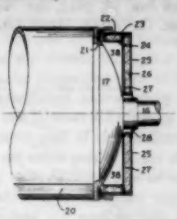
James E. Gamble, Box 18, Den Rd., Lincoln University, Pa.

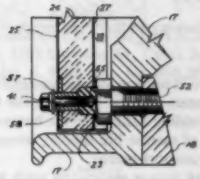
Continuation-in-part of Ser. No. 335,640, Dec. 30, 1981, and a continuation-in-part of Ser. No. 178,888, Aug. 18, 1980, Pat. No. 4,321,759, which is a continuation-in-part of Ser. No. 942,942, Sep. 18, 1978, Pat. No. 4,348,819. This application Mar. 29, 1982, Ser. No. 363,284

Int. Cl.³ F26B *13/08*

U.S. Cl. 34—110 **3 Claims**

1. In combination, a substantially rigid thermal insulation material end panel assembly for mounting on an axial end face of a heatable dryer cylinder, said dryer cylinder being capable of drying a web passing over the peripheral surface thereof, said dryer cylinder bearing a plurality of head bolts having bolt heads projecting axially from an end face thereof at spaced circumferential positions, said bolt heads having an internally threaded bore with said bore being adapted to receive and mate with a protruding panel assembly bolt, and a plurality of protruding panel assembly bolts operatively associated with and affixed to said thermal insulation material end panel assembly at circumferential positions corresponding to said bolt heads and projecting therefrom, said protruding panel assembly bolts being mechanically screwed into the internally





threaded bore of said bolt heads for removably locking said panel to the end of said dryer cylinder, said bolt heads of said head bolts have an elongated bolt head of sufficient thickness to contain said bore without substantial bore penetration into a standard thickness of the bolt head.

4,464,850

SHOE INSERT

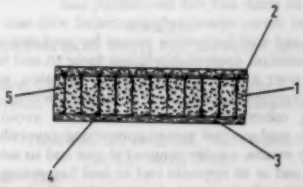
Heinrich Ebert, Abtsteinach; Manfred Noe, Laudenbach; Kurt Wind, Weinheim, and Günter Bitsch, Laudenbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,314

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148712

Int. Cl.³ A43B *13/38, 13/40*

U.S. Cl. 36—44 **18 Claims**

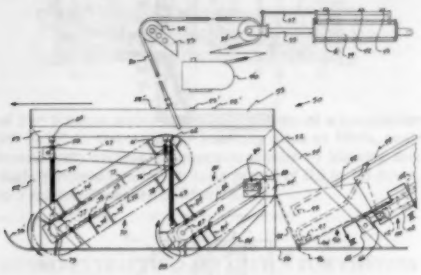


1. In a shoe insert consisting of a cross-linked polyolefin body foamed in a closed cell arrangement, and wherein a fiber layer is arranged at least on one surface of said body which will be in contact with the sole of the foot, the improvement comprising providing said fiber layer with hydrophilic fibers and/or filaments which are distributed on said surface in a pattern and which at least in part extend through the polyolefin body and have ends freely protruding through the underside of the body, said ends abutting an adhered layer of absorptive material, whereby moisture may be transferred between said surface layer and said layer of absorptive material.

4,464,851
UNDERWATER HARVESTER FOR MARINE LIFE

John A. Collier, Pendleton, S.C., assignor to Clemson University, Clemson, S.C.

Filed Jun. 18, 1982, Ser. No. 389,957
Int. Cl.[3] A01K 75/00; E02F 5/00
U.S. Cl. 37—55 6 Claims



1. An improved underwater harvester for harvesting marine life such as oysters and the like from the bottom of a body of water while avoiding damage to the bottom that would disrupt replenishment of marine life thereat comprising:

(a) marine transport means;

(b) harvesting means associated with said transport means for movement along said bottom and for harvesting marine life therefrom said harvesting means comprising a framework, a rotatable closed loop element angularly associated with said framework for presenting an end of same at said bottom, said closed loop element being rotatable in a counterclockwise direction and having means thereon for engaging and dislodging marine life from said bottom, a second rotatable closed loop element angularly associated with said framework rearwardly of said first closed loop element and being rotatable in a clockwise direction, said second closed loop element having means thereon for removing dislodged marine life from said bottom and conveying same rearwardly and upwardly, and means associated with said framework rearwardly of said second closed loop element to receive marine life therefrom;

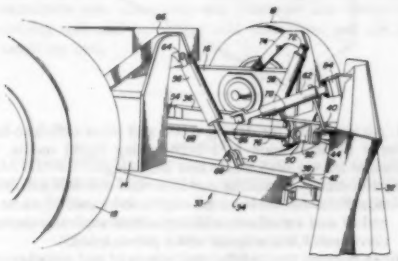
(c) escalator conveyor means associated with said transport means and said harvesting means for receiving marine life from said harvesting means and conveying same upwardly to said transport means, said conveyor means being coupled to said harvesting means to permit said harvesting means to pitch and roll thereabout; and

(d) control means operatively associated with said transport means and said harvesting means for applying a substantially constant controllable lifting force to said harvesting means over a predetermined depth variation, whereby a predetermined force only will be imparted by said harvesting means against said bottom to avoid damage thereto, said control means comprising reversible power take up means, a cable secured at one end to said take up means and at an opposite end to said harvesting means, a hydraulic cylinder located intermediate the length of said cable and having a piston rod moveable therewithin with means thereon associated with said cable to impart a predetermined force thereon, first, second and third switch means located along the path of movement of said piston rod, said first switch means being associated with said take up means to actuate said take up means to reel in cable, said second switch means being associated with said take up means to actuate same to play out cable and said third switch means being located between said first and second switch means and being associated with said take up means to deactuate same, said piston rod having switch actuator means associated therewith, normally residing adjacent said third switch means, whereby variation in the depth of said harvesting means will cause said piston to move in a force compensating direction and if such movement is great enough, to actuate one of said first and second switch means to adjust the length of said cable adequate to permit said piston and said switch actuator means to contact said third switch means to deactuate said take up means and to reinstitute said predetermined force on said cable.

4,464,852
DOZER ATTACHMENT FOR EXCAVATOR

Dennis A. Rice, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 7, 1983, Ser. No. 511,601
Int. Cl.[3] E02F 3/76
U.S. Cl. 37—117.5 7 Claims



1. In combination with an excavator having an undercarriage defined in part by first and second transversely spaced, fore-and-aft extending drive housings, a blade and attachment structure comprising: said blade extending transversely adjacent first ends of the drive housings; first and second fore and aft extending push beams respectively positioned alongside inner surfaces of the first and second drive housings; said first push beam having opposite ends universally connected to the inner surface of the first drive housing and a lower back location of the blade; said second push beam having its forward end universally connected to another lower back location of the blade; an angling link having a lower end universally connected to a rear end of the second push beam and having an upper end pivotally connected to the second drive housing for movement about a horizontal transverse axis; first and second lift actuators respectively positioned above the first and second push beams and respectively connected between the first drive housing and the first push beam and between the second drive housing and the second push beam; and a stabilizer strut having a forward end universally connected to the blade at a location above and in vertical alignment with the connection of the first push beam with the blade, to thereby define a blade angle axis and having a rearward end pivotally connected to the first push beam.

4,464,853
VENTILATED IRONING BOARD

Henry Mattesky, Cedar Grove, N.J., assignor to Magla Products, Inc., Irvington, N.J.

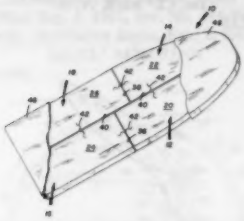
Filed Dec. 17, 1981, Ser. No. 331,594
Int. Cl.[3] D06F 81/00
U.S. Cl. 38—138 3 Claims

1. An ironing board comprising:

at least two planar members each having at least one planar surface and a plurality of edges, said planar members being arranged so that selected said edges of said planar members abut each other, said abutting edges being spaced apart a distance sufficient to permit the passage of steam therebetween, said planar surfaces of said planar members being disposed in a common plane; and

means for joining said planar members,

said planar members each comprise a pair of spaced apart planar surfaces having disposed therebetween said edges,



said edges falling in a plurality of substantially perpendicular and parallel planes wherein said planes are substantially perpendicular to said spaced apart planar surfaces.

4,464,854

CORRECTIONAL COLLAR

Marvin R. Hall, Star Rte., Box 37, Kansas, Okla. 74347

Filed Apr. 11, 1983, Ser. No. 483,583

Int. Cl.³ G09F *3/14*

U.S. Cl. 40—21 C **1 Claim**

1. A correctional collar to be worn around the neck of a person convicted of a crime comprising an elongated flexible strip having a width of about one to two inches and a length of about fifteen to thirty inches; said strip having a first pair of transversely spaced holes adjacent one longitudinal end of the strip, said first pair of holes being spaced inwardly from the longitudinal edges of said strip and being located generally along a line perpendicular to the longitudinal edges of said strip; said strip being provided with a second pair of transversely spaced holes arranged in parallel relation and longitudinally spaced a first predetermined distance away from said first pair of holes, the centers of said first and second pair of holes representing the four corners of a rectangle; the end of said strip opposite from said one end being provided with a plurality of additional pairs of transversely spaced holes arranged in parallel relation to each other and parallel to said first and second pairs of holes; each pair of holes of said additional pairs of holes being longitudinally spaced from each adjacent pair a second predetermined distance, the holes of all pairs of holes having the same transverse spacing; a plate carrying identification information thereon and having a width greater than the transverse spacing between the holes of each pair of holes and a length greater than said first predetermined distance and having holes therein corresponding in size and position to said first and second pairs of holes in said strip; first and second rivet members for securing said plate to said strip; each rivet member having a base and a pair of rivets projecting outwardly from the base in parallel relation to each other and spaced apart about a distance equal to the transverse spacing between the holes of each pair of holes, the outer diameter of each rivet in unflared condition being such that the rivet can pass through the holes in said strip and the holes in said plate; whereby said strip can be placed around the neck of said person with the said opposite end of said strip overlying said one end of said strip, the rivets of said first rivet member can be inserted through said first pair of holes, through a pair of said additional set of holes and thence through a pair of holes on said plate after which the projecting ends of the rivets of said first rivet member can be flared, and whereby the rivets of said second rivet member can be inserted through said second pair of holes, through another pair of said additional set of holes, and thence through two other pair of holes of said plate after which the projecting ends of the rivets of said second rivet member can be flared to lock the plate against the strip in encircling relation around the neck of said person, wherein said second predetermined distance is one-half of said first predetermined distance.

4,464,855

MAGAZINE FILLING DEVICE

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818

Filed Jul. 6, 1982, Ser. No. 395,286

Int. Cl.³ F41C *27/00*

U.S. Cl. 42—87 **12 Claims**

1. A cartridge magazine filling device comprising: a base having an angularly disposed tray for insertion into a feed mouth of a magazine; said tray having a bottom surface for depressing a cartridge positioned in said mouth toward a floor of said magazine; said tray having a top surface for guiding another cartridge into said mouth; and said tray being positionable between a top cartridge in said magazine and another cartridge in said magazine.

4,464,856

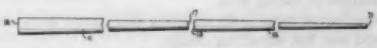
FISHING ROD WITH IMPROVED CASTING CHARACTERISTICS

John Holden, Chelmsford, England, and Milton J. Green, Quilcene, Wash., assignors to Woodstream Corporation, Lititz, Pa.

Filed Jan. 20, 1982, Ser. No. 340,848

Int. Cl.³ A01K *87/00*

U.S. Cl. 43—18.5 **17 Claims**



1. A fishing rod comprising:

first and second elongated hollow tapered tubular blanks having first ends with relatively large inner and outer diameters and second ends with relatively small inner and outer diameters, said blanks being disposed coaxially with the second end of the first blank frictionally engaged within the first end of the second blank;

wherein the inner and outer diameters of the first end of the

first blank are larger than the inner and outer diameters, respectively, of the second end of the second blank;

wherein said fishing rod includes a butt zone extending longitudinally from the first end of said first blank to include at least 70–80% of the first blank length, said butt zone having an inner diameter which tapers toward the second end of said first blank at a first relatively small average taper rate with respect to the first end of the first blank;

wherein said fishing rod includes a tip zone extending longitudinally from said second end of said second blank to include between 20–30% of the second blank length; and

wherein said fishing rod includes a mid-zone extending longitudinally between said butt and tip zones and overlapping said first and second blanks, said mid-zone including:

a first longitudinally-extending section including the second end of said first blank, said first section having an inner diameter which tapers toward the second end of said first blank at a rate which is an order of magnitude greater than said first average taper rate; and

a plurality of successive longitudinal sections, followed by successive sections of said tip zone, extending from the first end of said second blank, each successive section having an inner diameter which tapers at a rate which is different from the taper rate of the preceding section and is at least approximately one order of magnitude greater than said first average taper rate.

4,464,857

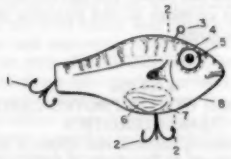
FISHING LURE AND METHOD OF FABRICATION

Daniel P. Olszewski, R3, Box 972, South Merrit Island, Fla. 32952

Continuation of Ser. No. 142,868, Apr. 20, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,805

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.33 **13 Claims**



1. A fishing lure, comprising:

a center body section;

a fish attracting design including bait body element simulating designs covering said center body section, one of said designs including eyes;

a transparent outer body encasing said center body section and said fish attracting design;

said transparent outer body including an inner and outer surface; and

lens means formed as concaved areas in said inner surface of said transparent outer body positioned to overlie predetermined body element simulating designs to optically affect the image created by said predetermined body element of said fish attracting design as a function of relative position between lure and observer to optically provide the illusion of motion within said fish attracting design.

4,464,858

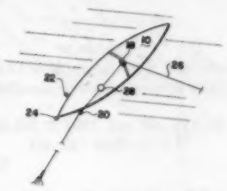
CURRENT CORK

Bill R. Wright, 2008 Nebraska Ave., Muskogee, Okla. 74401

Filed May 20, 1982, Ser. No. 380,088

Int. Cl.³ A01K *91/00*

U.S. Cl. 43—43.13 **8 Claims**



1. A multipurpose fishing device comprising:

(a) a single elongated essentially flat surface characterized in that the longitudinal axis extending from the leading end to the trailing end of said surface is substantially greater than the maximum width of the surface and wherein said surface is intended to act as a vertical planing surface or vertical hydrofoil during operation;

(b) a first wire eyelet means between said leading end and trailing end, wherein said first wire eyelet means is operatively attached transversely to said longitudinal axis of said single elongated essentially flat surface by the wire of said wire eyelet means and rigidly positioned at a fixed distance away from one side of said flat surface and essentially above said longitudinal axis; and

(c) at least one second eyelet means near the trailing end of said surface and operatively attached to said surface essentially in the plane of said surface and displaced to one side of said longitudinal axis for suspending said fishing device in cooperation with said first wire eyelet means

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4,464,859

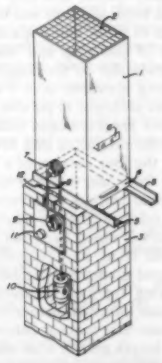
ANIMAL RECOVERY

William J. Gompers, Bridgeville Borough, Allegheny County, Pa. 15017

Filed Jul. 12, 1982, Ser. No. 397,523

Int. Cl.³ A01M *29/00*

U.S. Cl. 43—58 **7 Claims**



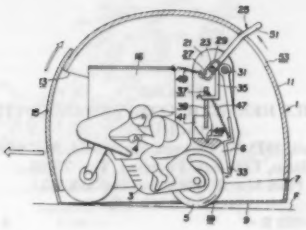
1. Method of capturing an animal residing in a chimney comprising (1) lowering an electrically-operated noisemaker to a point near the animal, (2) activating the noisemaker to startle the animal and cause it to move up the chimney, (3) raising the noisemaker up the chimney behind the animal as it ascends, and (4) capturing the animal at the top of the chimney.

4,464,860

LAUNCHING APPARATUS FOR RESILIENT DRIVE MOBILE TOY

Takehiko Onodera, Noda, Japan, assignor to Kabushiki Kaisha Bandai and Sanimu Co., Ltd., both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,399
Claims priority, application Japan, Feb. 2, 1982, 57-13278[U]
Int. Cl.³ A63H *33/00*
U.S. Cl. 446—491 **4 Claims**



1. A launching apparatus for a resilient drive mobile toy having a drive wheel, comprising:

a receptacle for accommodating the mobile toy, said receptacle including an opening for passing the mobile toy and a floor plate having a slot formed therethrough for partly projecting said driven wheel outwards;

means, provided to said receptacle, for releasable holding the mobile toy so that said driven wheel engages said slot for stopping the rotation thereof by friction; and

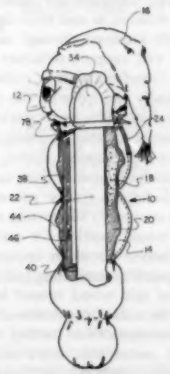
means comprising a first lever pivotally supported by said receptacle and spring biased for pushing the mobile toy toward said opening so that said driven wheel is disengaged from said slot when said holding is released.

4,464,861

PLUSH TOY

A. Edward Fogarty, and Bonnie R. Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579

Continuation-in-part of Ser. No. 341,851, Jan. 2, 1982, abandoned. This application Apr. 13, 1983, Ser. No. 484,631
Int. Cl.³ A63H *33/26*
U.S. Cl. 446—370 **9 Claims**



1. An electrically lighted plush toy, comprising:

a semi-rigid vinyl, hollow, translucent head;

a plush exterior cover attached to said head;

a resilient mass enclosed by said cover;

an essentially cylindrical, molded plastic, translucent battery and lightbulb housing having an intergrally molded battery compartment, an integrally molded globe for enclosing a lightbulb, an integrally molded operating lever positioned on its exterior, a first electrical conductor positioned in its interior, and a second electrical conductor positioned in its interior, said first electrical conductor and said second electrical conductor being adapted to complete an electrical circuit including a battery in said battery compartment and a lightbulb in said globe when said operating lever is depressed; and

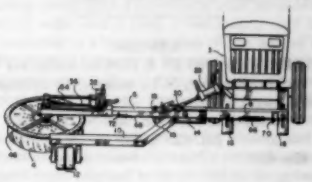
a molded plastic retaining ring attached in the interior of the neck portion of said head, said retaining ring being adapted to coaxially position and retain said housing in the interior space circumscribed by said cover and said resilient mass.

4,464,862

CHEMICAL APPLICATOR

Donald L. Peterson, Martinsburg, and William V. Welker, Jr., Charles Town, both of W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 429,913
Int. Cl.³ A01C *23/04*
U.S. Cl. 47—1.5 **1 Claim**



1. An apparatus for applying chemicals to vegetation comprising;

(a) a frame;

(b) a wiper member mounted on said frame, said wiper member comprising an absorbent component, a manifold fitted within the absorbent component for delivering chemicals to said component, and a free-wheeling circular component which is separated from the manifold of the wiper member by a spacer and has a diameter larger than that of the wiper member;

(c) vertical pivot arms attached to the frame for lifting the wiper member;

(d) a hydraulic cylinder mounted on the frame for activating the vertical pivot arms, said cylinder being provided with flexible chain links to allow the wiper member to follow the contour of the ground automatically;

(e) means defining pivot point on the frame to allow the wiper member to pivot around non-targeted objects;

(f) height adjustable wheels attached to the frame for controlling the height above ground of the wiper member;

(g) driving means on the frame for rotation of the wiper member; and

(h) supply means to provide chemicals to the manifold.

4,464,863

SLIDING TYPE DOOR ASSEMBLY

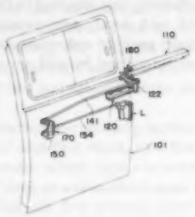
Takayo Chikaraishi, Kawasaki, and Hiroshi Itoh, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 12, 1981, Ser. No. 292,165

Claims priority, application Japan, Aug. 30, 1980, 55-119010; Aug. 30, 1980, 55-120219; Aug. 30, 1980, 55-120221

Int. Cl.³ E05D *15/10*

U.S. Cl. 49—213 **12 Claims**



1. A sliding type door assembly for a vehicle comprising:
a guide rail;
a door movable along the guide rail to open and close an opening of the vehicle;
a guide follower attached to the door for movement along the guide rail so as to guide the door;
a brake mechanism for braking the guide follower relative to the guide rail to stop the door at a desired position;
a brake release mechanism for releasing the brake mechanism;
a brake release handle connected to the brake release mechanism for actuating same; and
means for automatically releasing the brake mechanism just before the door is completely closed.

4,464,864

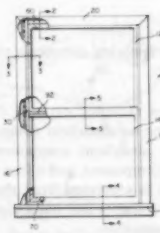
WEATHERSTRIPPING IN A DOUBLE-HUNG WINDOW

Charles Yackiw, Fairport, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Jun. 16, 1983, Ser. No. 504,820

Int. Cl.³ E05D *15/16*

U.S. Cl. 49—404 **16 Claims**



1. In a double-hung window of the type including upper and lower sashes slidably mounted in opposed facing side jambs and movable between top and bottom rails the improved sealing apparatus comprising:
first and second resilient weatherseal elements attached to said side jambs, each of said weatherseal elements having first and second sealing surfaces substantially perpendicular to said side jambs and a third sealing surface substantially parallel to said side jambs;
third and fourth resilient weatherseal elements carried by said upper and lower sashes respectively, said third weatherseal element sealingly engaging said first sealing surfaces of each of said first and second resilient weatherseal elements said fourth weatherseal element sealingly engaging said second sealing surfaces of each of said first and second resilient weatherseal elements; and
a fifth weatherseal element carried by one of said sashes sealingly engaging the other of said sashes and said third surfaces of each of said first and second weatherseal elements.

4,464,865

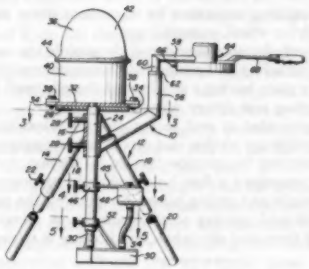
PORTABLE HERMETIC COMPRESSOR CUTTING MACHINE

Jessie J. Shull, 2823 W. Chicago, Springfield, Mo. 65803, and Jimmy J. Hunt, 1204 Eva, Pasadena, Tex. 77502

Filed Mar. 8, 1982, Ser. No. 355,862

Int. Cl.³ B24B *5/08*

U.S. Cl. 51—105 R **4 Claims**



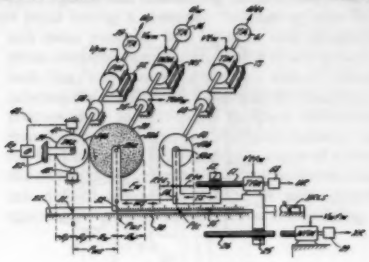
1. An apparatus for cutting the welding joint extending about a cylinderical hermetically sealed compressor housing wherein the welding forms the hermetic seal thereof and for opening the housing for compressor repairs, said apparatus including a portable base assembly for support from a suitable support surface and incorporating an upright base sleeve, an upright support sleeve telescopingly received through and vertically adjustable relative to said base sleeve, a drive shaft slidingly and rotatably received through said support sleeve and including upper end support structure for support of a compressor housing therefrom with a cylindrical portion of said housing substantially aligned with the center axis of said drive shaft, said drive shaft and support sleeve including coacting thrust bearing means to limit downward shifting of said drive shaft relative to said support sleeve, a mount portion carried by said base laterally spaced from said base, a cutting wheel assembly including a rotary power driven cutting wheel, a support arm swingably supporting said cutting wheel assembly from said mount portion for oscillatory swinging movement relative thereto about an upstanding axis spaced laterally from and generally paralleling said base sleeve, with the axis of rotation of said wheel spaced laterally from and generally paralleling the axis of oscillation of said support arm and for swinging movement of said cutting wheel axis toward and away from said center axis, drive means operative to rotatably drive said drive shaft relative to said support sleeve about said center axis at slow rotational speed, said drive means including a drive motor supported from the lower end of said support sleeve below said base sleeve and for vertical adjustment with said support sleeve relative to said base sleeve, said drive motor including a rotary output shaft releasably drivingly connected to the lower end of said drive shaft.

4,464,866

CONTROL SYSTEM FOR FINISH GRINDING METHODS AND APPARATUS

Roderick L. Smith, Rockford, Ill., and Norbert C. Kolell, Fond du Lac, Wis., assignors to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Filed Mar. 5, 1982, Ser. No. 355,304
Int. Cl.³ B24B 49/10
U.S. Cl. 51—165.87 **28 Claims**



1. A method of finish grinding a selected workpiece with a selected grinding wheel while simultaneously truing the grinding wheel with a selected truing element, said method comprising

determining the relationship between the wear rate of said grinding wheel and the feed rate at which said grinding wheel is fed into said workpiece,

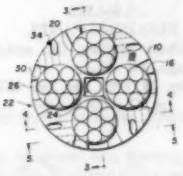
feeding said grinding wheel into said workpiece at a grinding feed rate which decreases as the desired final radius of the workpiece is approached, and simultaneously feeding said truing element into said grinding wheel at a rate which varies in accordance with said relationship between the wear rate of said grinding wheel due to grinding and the decreasing feed rate at which said wheel is fed into said workpiece.

4,464,867

RADIALLY ADJUSTABLE LAP

Forrest E. Ganther, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Continuation of Ser. No. 60,711, Jul. 26, 1979, abandoned. This application Jan. 7, 1982, Ser. No. 337,894
Int. Cl.³ E06B 7/14
U.S. Cl. 51—209 R **1 Claim**



1. A lap for grinding, polishing or fining a toric lens surface comprising:

a body having a convex surface containing a plurality of radial grooves formed in the upper surface thereof;

a plurality of polishing elements;

mounting means extending downwardly from said polishing elements and received by said radial grooves in said body;

a plurality of dome-shaped polishing surfaces mounted on said polishing elements and forming the working surface of said polishing elements, each of said dome-shaped polishing surfaces being convexly curved in a first direction to form in combination with the remaining polishing surfaces on said polishing elements a first lens contact surface having a constant arc of radial curvature, and each of said dome-shaped polishing surfaces being convexly curved in a second direction to form in combination with the remaining polishing surfaces on said polishing elements a second lens contact surface having a constant arc of radial curvature, whereby when said lap grinds, polishes or fines a lens, said first lens contact surface forms the base curve on the lens and said second lens contact surface forms the cross curve on the lens;

said mounting means being radially adjustable along said grooves; and

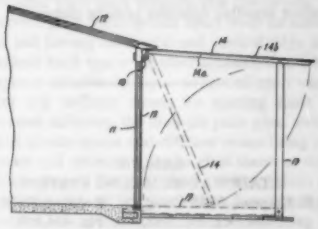
locking means for securing said polishing elements at selected radial positions in said grooves.

4,464,868

BUILDING CONSTRUCTION

Lawrence H. Howroyd, 50 Victoria St., Hobart, Tasmania, Australia

Filed May 18, 1981, Ser. No. 264,409
Int. Cl.³ E04B 1/344
U.S. Cl. 52—69 **5 Claims**



1. A building comprising a permanent main structure having interconnected walls and a roof, a secondary roof structure pivotally connected to a least a portion of one wall of the main structure for pivotal movement between a raised position in which it extends outwardly to form the roof of a verandah, porch, carport or the like and a substantially vertical lowered position in which said secondary roof structure substantially covers said portion of the wall, means for biasing said secondary roof structure to its raised outwardly extending position, a pair of support posts adapted to be pivotal to the ground independently of and spaced from said main structure for movement from a raised position wherein each of said posts is adpated to support a respective side of said secondary roof structure and a lowered position wherein said posts are substantially flush with the ground and extend from their pivotal supports toward said one wall portion, locking means for detachably connecting the upper ends of said posts to said secondary roof structure when said posts and said secondary roof structure are in their raised positions, and retaining means for detachably retaining said secondary roof structure to said posts when said posts and said secondary roof structure are in their lowered positions with the lower end of the seocndary roof structure disposed outwardly of the lower end of the one wall portion for providing a storage area between the secondary structure and said one wall portion when said secondary roof structure is in its lowered position to contain and protect articles.

4,464,869

DRY WALL BUILDING PANEL REPAIR DEVICE

Robert L. Parkin, 9 Old Field Rd., Huntington, L.I., N.Y. 11743

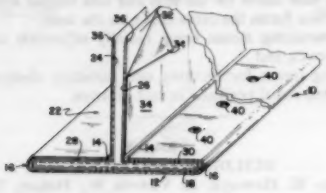
Filed Sep. 29, 1982, Ser. No. 426,716
Int. Cl.³ E04G 23/02
U.S. Cl. 52—173 R **5 Claims**

1. Dry wall repair strip means severable into appropriate lengths at the locus of use thereof, comprising

an elongate rigid planar base portion having a pair of parallel

marginal edges disposed substantially equidistant from the longitudinal center line thereof,

a pair of elongate tape members anchored to said base portion, extending normal thereto along said longitudinal center line and individually foldable into parallel spaced relation with said base portion,



a coating of pressure sensitive adhesive material selectively disposed on the outwardly facing surfaces of each of said tape members, and

a removable covering for each said adhesive material coated portion of said tape members to operatively expose said pressure sensitive adhesive coating thereon.

4,464,870

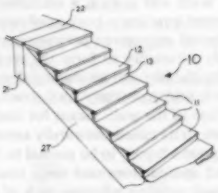
STAIRWAY-BUILDING SYSTEM

Richard E. Crepeau, 2045 Canal Dr., Redding, Calif. 96001

Filed Oct. 25, 1982, Ser. No. 436,448

Int. Cl.³ E04F *11/00*

U.S. Cl. 52—188 **7 Claims**



1. A stairway construction system for use between upper and lower levels of a structure, comprising:

a. two or more notchless stringers for use between upper and lower levels of a structure, each having an upper surface, and

b. a modular stair step unit mountable on said upper surface of said notchless stringers and consisting substantially of:

i. a substantially rectangular tread member having a front edge, a rear edge, a bottom surface and a groove in said bottom surface substantially parallel to and near said front surface;

ii. a substantially rectangular riser member having a top edge fitted into said groove in said tread member and rigidly attached thereto, and further having a bottom edge and a back surface, and

iii. structural support means rigidly attached to said bottom surface of said tread member and said back surface of said riser member;

said rear edge of said substantially rectangular tread member and said bottom edge of said substantially rectangular riser member being trimmable in the field so that said modular stair step unit is easily modified to accommodate construction of stairways with different run and rise requirements.

4,464,871

COMBINED STRUCTURAL AND SOLAR PANEL

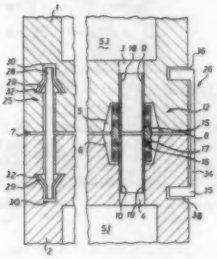
Robert Schwendimann, Reinhold-Frei-Strasse 15, Zurich, Switzerland

Filed Dec. 11, 1980, Ser. No. 215,543

Claims priority, application Switzerland, Dec. 17, 1979, 11167/79; Apr. 23, 1980, 3146/80

Int. Cl.³ F24J *3/02*; E04B *5/48*; E04F *17/08*

U.S. Cl. 52—220 **7 Claims**



1. Interconnecting arrangement of structural and solar panels, each panel comprising a parallelepiped body having at least one pair of opposed planar side edges and fluid conduit means located in the interior thereof, at least one bore in communication with said fluid conduit means extending between said side edges and having an enlarged recess at each end opening to a respective one of the side edges, a pipe section located at each end of said bore and extending outwardly into the corresponding side recess a distance no greater than to the plane of said edge, said panels being formed to permit the alignment of paired panels in abutting edge to edge relationship with their pipe sections in registry a first bushing having a length substantially equal to the sum of the abutting recesses to surround the exposed exterior circumferential surfaces of the registered pipe sections, and a pair of o-ring seal means interposed between the surface of said bushing and the associated surfaces of each of the registered pipe sections to permit relative sliding movement between pipe and bushing without loss of fluid, and a second tubular bushing inserted within said registered pipe sections, said second bushing having an annular collar substantially midway along its length adapted to be interposed between the abutting pipe sections so that said second bushing maintains a portion thereof in each pipe section.

4,464,872

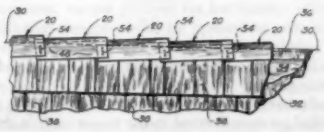
BUILDING PANEL

James W. Eaton, Sleepy Hollow, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 427,543

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—276 **12 Claims**



1. A rectangular building panel adapted to cover intersecting surfaces on opposite sides of an apex of intersection;

said panel formed of composite wood fibre materials having a substantially flat back face and an outer face having a narrow flat portion along one longitudinal edge designed to underlie the back face of a panel in a next course and a substantially larger portion adapted for exposure to the weather having an irregular surface resulting in variations

in panel thickness at different locations on said panel faces, said irregular surface being deeply embossed to resemble a pair of shingle-like elements disposed on opposite sides of an axis normal to said longitudinal edge generally bisecting said panel,

said panel having a generally V-shaped groove formed in said back face extending along said axis and adapted to overlie said apex of intersection on the application of said panel against said intersecting surfaces of a building,

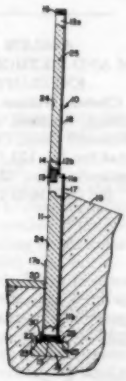
said panel having a generally V-shaped groove formed in said outer irregular face between said shingle-like elements directly opposite and parallel of said groove in said back face, said grooves defining a web of said panel of substantially constant thickness between the apexes of said grooves, said web having a thickness substantially less than the average thickness of said panel between said faces for facilitating the angular displacement of said shingle-like elements on opposite sides of said grooves along a fold axis defined along said web to fit said opposite sides against said intersecting surfaces of said building.

4,464,873

WALL PANEL SYSTEM

Lee S. Geiger, 304 San Marco, Rapid City, S. Dak. 57701

Filed Jan. 14, 1983, Ser. No. 457,913
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—293 **25 Claims**



1. A wall panel system for use as a foundation and upper wall comprising:

(a) a plurality of spaced first framing members having top ends and bottom ends and first and second edges;

(b) a plurality of spaced second framing members having top ends and bottom ends and first and second edges, said spacing between said first framing members being substantially equal to said spacing between said second framing members, said bottom ends of said second framing members positioned on top of said top ends of said first framing members;

(c) means for fastening said first framing members to said second framing members;

(d) foundation grade treated sheathing cooperatively connected to said first edge of said first framing member; and

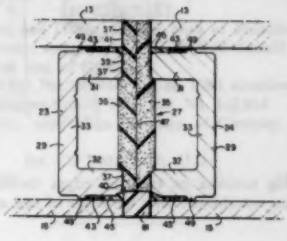
(e) external sheathing cooperatively connected to said first edge of said second framing member.

4,464,874

WINDOW UNIT

John R. Shea, Jr., Baltimore, Md.; A. Risher Hall, Vincentown, and Robert C. Hordis, Beverly, both of N.J., assignors to Hordis Brothers, Inc., Pennsauken, N.J.

Filed Nov. 3, 1982, Ser. No. 439,064
Int. Cl.³ E06B *3/24*
U.S. Cl. 52—398 **5 Claims**



1. A multiple pane glass window unit comprising

an outboard glass sheet spaced apart from an inboard glass sheet and having horizontal and vertical edge portions,

a horizontal head spacer member connected to a horizontal sill spacer member by a pair of spaced-apart vertical side spacer and stiffener means for spacing apart the glass panes and stiffening the multiple pane glass unit,

said vertical side spacer and stiffener means being positioned between and connected to the glass sheets at the vertical edge portions of the glass sheets to space them apart and protect the edge of the glass sheets from damage,

said vertical side spacer and stiffener means being U-shaped with a pair of legs extending from a base portion,

said vertical side spacer and stiffener means being mounted at the vertical peripheral edges of the glass sheets with the edges of said legs substantially flush with the vertical peripheral edges of the glass sheets and mounted solely within the interior of the glass sheets,

and gasket means attached to the vertical edges of said legs for sealing the vertical space between side-abutting window units,

said gasket means being adapted to be positioned and compressed between the vertical sides of side-abutting window units,

whereby the window units may be installed from the inside of a building.

4,464,875

WALL PANEL BRACING RIB AND WALL CONSTRUCTED THEREWITH

Alan C. Wendt, Barrington, and David Krakowski, Deerfield, both of Ill., assignors to Unites States Gypsum Company, Chicago, Ill.

Filed Sep. 20, 1982, Ser. No. 420,183
Int. Cl.³ E04B *2/30*
U.S. Cl. 52—481 **8 Claims**

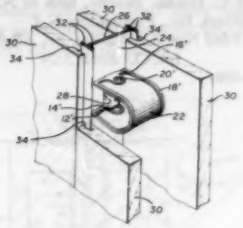
2. A wall structure comprising:

a plurality of vertical studs spaced apart in co-planar array, each said stud comprising a web and flanges connected at right angles to said web along the opposite vertical edges thereof, said web having a rectangular aperture centered between the margins thereof;

wall panels attached to opposing flanges of said studs, thereby creating a cavity in which said studs reside; and

a wall panel bracing rib secured to said web within said cavity in edge-abutting relationship to a wall panel, said rib comprising a 180° bow of bendable material and an

integral tab projecting horizontally from each end of said bow and through the aperture within the web, said tabs



being notched on opposite edges thereof and thereby being interlocked with the edges of said aperture.

4,464,876

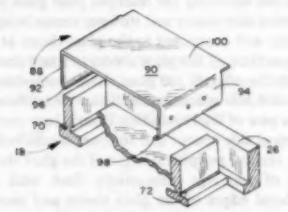
SUSPENDED WOODBEAM CEILING CONSTRUCTION

Gilbert G. Kern, 515 N. Victory Blvd., Burbank, Calif. 91502

Continuation-in-part of Ser. No. 259,858, May 4, 1981, which is a continuation-in-part of Ser. No. 028,904, Apr. 10, 1979, Pat. No. 4,281,498. This application Aug. 12, 1982, Ser. No. 407,652

Int. Cl.³ E06B *3/54*

U.S. Cl. 52—484 **4 Claims**



1. A suspended woodbeam ceiling comprising:

at least one beam, said beam comprising first and second longitudinal woodbeam side members, each of said woodbeam side members being L-shape, said woodbeam side members each having upwardly facing lip with said lips facing away from each other, a beam center attached to and positioned between said woodbeam side members to maintain said side members apart in spaced relationship, each of said first and second woodbeam side members having a groove along the length thereof with each said groove positioned above said lips so that said grooves face away from each other, each of said grooves having a top toward the upper edge of said woodbeam and a bottom toward said lip of said woodbeam; and

attachment means for attaching to said beam, said attachment means having an inverted U-shaped configuration sized so that said attachment means embraces over the top of said beam side members, said engagement means having a flange on each side thereof extending down over the outside of said wood side members, an inturned finger on each said flange adjacent the lower end thereof, said fingers engaging in said grooves, said fingers being spaced the same distance from the web spanning said flanges as said grooves positioned from the tops of said side members so that said web engages the tops of said sidewalls when said fingers are in said grooves, said attachment means being free of engagement with the surfaces of said beam side members which face each other, said attachment means being for engagement with another member for retention of said member with respect to said beam.

4,464,877

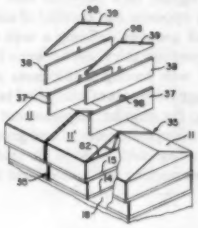
METHOD OF ASSEMBLING MULTI-UNIT, PARTY WALL RESIDENTIAL BUILDINGS AND FIRE-RESISTANT PARTY WALL STRUCTURE

Ronald E. Gebhardt, Sewickley; Richard C. Haldeman, Bethel Park, both of Pa., and Eric Marten, Dallas, Tex., assignors to Ryan Homes, Inc., Pittsburgh, Pa.

Filed Nov. 12, 1981, Ser. No. 320,201

Int. Cl.³ E04B *1/343, 7/16*

U.S. Cl. 52—745 **10 Claims**



1. A method of assembling a multi-unit, party wall building on a foundation comprising the steps of connecting at least one floor deck, vertical side walls and a roof for each said unit and connecting a vertical end wall to the end units of each building, maintaining an opening between the contiguous units above the said foundation, and thereafter installing a fire-resistant party wall between contiguous units by sliding party wall sections downwardly between the roofs of the contiguous units.

4,464,878

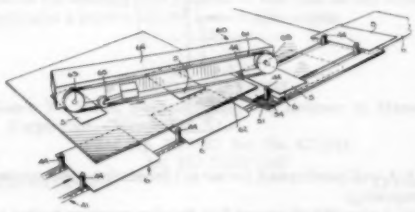
MECHANISM AND METHOD OF MAKING AN ENVELOPE

Roman M. Golicz, Clinton; William H. Gunther, Jr., Mystic, and James W. Hough, Madison, all of Conn., assignors to George Schmitt Research Corp., Chester, Conn.

Continuation-in-part of Ser. No. 122,278, Feb. 19, 1980, Pat. No. 4,312,169. This application Nov. 23, 1981, Ser. No. 324,761

Int. Cl.³ B65B *11/48*

U.S. Cl. 53—206 **19 Claims**



1. A mechanism for forming an envelope, comprising a composite sheet which includes an envelope assembly and a letter assembly connected together in transverse relationship to each other, means for moving said composite sheet in a lengthwise direction, means for severing said composite sheet lengthwise between said letter insert assembly and said envelope assembly to separate the two assemblies, means for moving the envelope assembly along one path and for moving the letter insert assembly along another path, said means for moving the letter insert including means for positioning the letter insert assembly in superimposed relationship to the envelope assembly, said means for moving the envelope assembly including means for causing the letter assembly insert to be deposited on said moving envelope assembly, means for fold-

ing the envelope around the letter insert assembly, means for sealing the edges of the envelope assembly, the paths of said insert assembly and said envelope assembly being in superimposed relationship to each other, means for deflecting said insert assembly and said envelope assembly in opposite directions for deposition of each on the respective moving means, means for moving said letter assembly transversely to be superimposed over the envelope assembly, said moving means comprising a transverse conveyor is mounted above the envelope assembly moving means, said transfer conveyor being angled and extending from a position over the path of the insert assembly to a position over the path of the envelope assembly, said transfer conveyor adapted to grasp an insert assembly and move it from a position over the path of the insert assembly to a position over the path of the envelope assembly.

4,464,879

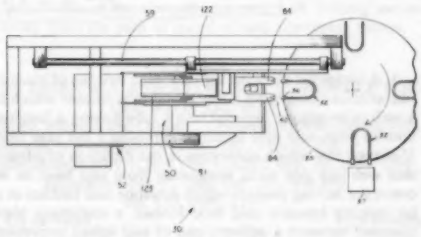
METHODS OF AND APPARATUS FOR TRANSFERRING RETRACTILE CORDS

Robert P. Loesch, Omaha, Nebr., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed May 28, 1982, Ser. No. 383,362

Int. Cl.³ B65B *5/04, 63/04*

U.S. Cl. 53—428 **20 Claims**



6. A method of transferring a retractile cord from a holder into an open end of a container, said method comprising the steps of:

grasping ends of the cord;

moving the cord outwardly from the holder with the cord being in a generally U-shaped configuration;

intercepting a middle portion of the length of the cord;

continuing to apply pulling forces to the cord ends to extend the helices of the cord;

releasing the ends of the cords to cause the cord to be received in a horizontally disposed tray;

releasing the middle portion of the cord; and

turning the tray to cause it to be oriented substantially vertically with a lower end thereof aligned with an open end of the container and to cause the cord to be moved into the container.

17. Apparatus for transferring a retractile cord from a holder into an open end of a container, said apparatus including:

means for grasping the cord ends;

means for moving said grasping means to cause the cord to be moved outwardly along a path of travel from the holder with the cord in a generally U-shaped configuration;

means for intercepting a middle portion of the cord length to cause the helices of the cord to be extended as the cord ends are moved farther outwardly from the holder;

a tray disposed beneath the path of travel of the cord, said tray including two portions which are connected together in a manner which allows said tray to be folded to orient said portions substantially vertically, said portions when oriented vertically providing an opening at the lower ends thereof with said opening being aligned with an open end of the container; and

means for causing said grasping means to release said plugs, for causing said intercepting means to become disengaged from the cord, and for causing said tray to be folded to allow the cord to be moved through said tray opening into the aligned open end of the container.

4,464,880

METHOD AND APPARATUS FOR INTRODUCING STACKS OF SHEETS INTO PREFABRICATED CARTONS OR THE LIKE

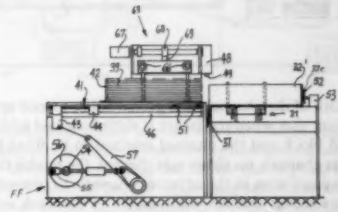
Hartmut Peters, and Hulusi Yilmaz, both of Hamburg, Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 192,444, Sep. 30, 1980, abandoned. This application Feb. 1, 1983, Ser. No. 463,014

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940600

Int. Cl.³ B65B *5/06, 25/14*

U.S. Cl. 53—493 **37 Claims**



1. A method of introducing substantially unsupported stacks of superimposed sheets of paper or the like including a lowermost sheet into cartons or analogous receptacles of the type having a bottom wall and several upstanding side walls which define an opening extending at least close to the respective bottom wall, one of said side walls being located opposite said opening in such a manner so as not to deform said stacks or otherwise shift the sheets thereof, said method comprising the steps of conveying successive receptacles to a predetermined location; feeding a stack into each of the receptacles at said location while supporting said stack from below through the opening by introducing said stack into each receptacle along a horizontal path at such a level above its bottom wall that the lowermost sheet of the stack approaching said location is disposed only slightly above the respective bottom wall; advancing said stack into such receptacle until such stack contacts said side wall opposite said opening causing said opposite side wall to contact a stop and actuate a sensing device which causes a signal to be transmitted to arrest the advance of said stack and cause the stack to be deposited in the receptacle with such lowermost sheet coming to rest on the respective bottom wall by descending a short distance prior to coming in contact with the bottom wall of the receptacle; and thereupon closing the opening.

4,464,881

READER-FILLER MACHINE FOR INSERTING FILM STRIPS INTO MICROFICHE JACKETS

Isidore Dorman, Whitestone, N.Y., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 11, 1982, Ser. No. 338,609

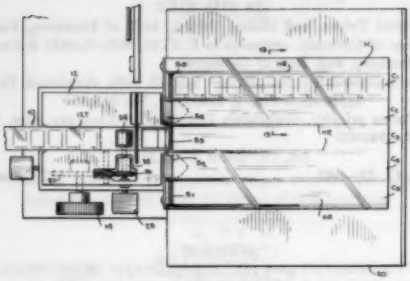
Int. Cl.³ B65B *63/00, 39/00*

U.S. Cl. 53—520 **9 Claims**

1. A machine adapted to insert a strip of microfilm having a series of image frames thereon into a selected channel of a microfiche jacket provided with parallel channels, each channel having the same width and having an entry slot adjacent the front end thereof, the machine comprising:

(A) a track block having a track for receiving the film strip and conducting it toward an exit;

(B) a film drive mechanism for advancing the film strip along the track toward said track exit or to retract the strip;
(C) a table whose front end is adjacent said track exit for supporting a microfiche jacket which is shiftable thereon toward said block; and
(D) a pair of planar locating guides projecting from the block, each guide having a width substantially equal to the



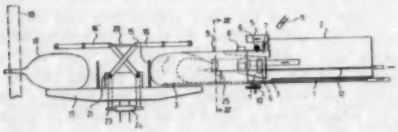
width of the channel, said guides being spaced apart to an extent that when the jacket is shifted on said table toward said block and the channel selected to be filled has adjacent channels on either side thereof, the guides then enter the entry slots in the adjacent channels to properly orient the selected channel with respect to the track exit; and
(E) means cooperating with the block to slice the film on the track.

4,464,882

DEVICE FOR PACKING A FOWL

Mannes Van Ginkel, Barneveld, and Kornelis Van 'T Slot, Uddel, both of Netherlands, assignors to Moba Holdings, Barneveld B.V., Netherlands

Filed May 11, 1982, Ser. No. 377,046
Claims priority, application Netherlands, May 21, 1981, 8102374
Int. Cl.³ B65B *63/02, 1/24*
U.S. Cl. 53—530 **8 Claims**



1. In a device for packing a fowl the improvement comprising:
means for defining a deposit location for receiving the fowl and a dressing passage through which the fowl is pushed in a longitudinal direction from the deposit location,
a central baffle mounted centrally in the deposit location and extending in the longitudinal direction and positioned such that when a fowl is placed in the deposit location, the legs of the fowl will be positioned one on each side of the baffle, said baffle being movable from said position in the deposit location toward the dressing passage,
a pushing member having a foward end comprising engaging means for engaging the ends of both legs of a fowl which has been placed in the deposit location,
said pushing member being movable from a first position, whereat it is spaced sufficiently far from the dressing passage that it is free from engagement with a fowl originally placed onto the deposit location, to a second position whereat said engaging means engages the ends of both legs of the fowl while the baffle continues to separate the legs from each other, to a third position whereat the pushing member pushes the fowl through the dressing passage, said baffle being movable along with the pushing member at least from said second position to said third position.

4,464,883

WRAPPING MACHINES

William Glover, West Denton, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Dec. 4, 1981, Ser. No. 327,451
Claims priority, application United Kingdom, Dec. 11, 1980, 8039691
Int. Cl.³ B65B *9/10, 11/10*
U.S. Cl. 53—550 **5 Claims**

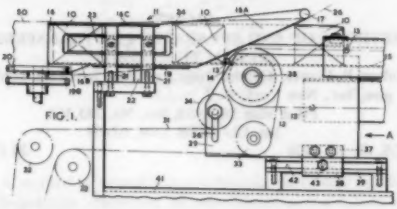


FIG. 1.

1. A wrapping machine for wrapping batches of biscuits and like articles comprising a horizontal tube former which forms a web of wrapping material into a tube having a longitudinal bottom joint, said tube former comprising a flat base having a V-shaped slot which converges in the direction of advance of said web and side walls upstanding from said base, an infeed conveyor having pushers which advance said batches at regular spacing towards said tube former, a stationary platform disposed between a delivery end of said infeed conveyor and said tube former and arranged to receive said batches in succession from said conveyor, said platform having a platform base disposed at a slightly higher level than said base of said tube former, said platform having sides disposed inwardly of said side walls of said tube former and serving temporarily to support batches advanced onto said platform by said infeed conveyor until said batches are pushed off said platform by succeeding batches delivered thereto by said infeed conveyor, means for guiding said web so that a central portion of said web drapes over top and side portions of each advancing batch and edge portions thereof pass downwardly through gaps defined between said side walls of said tube former and said platform, then inwardly between said bases of said platform and said tube former and finally downwardly through said V-shaped slot to form said longitudinal bottom joint, and drive means for engaging said bottom joint to advance the web continuously through the tube former to form a tube, tightly embracing and supporting said batches.

4,464,884

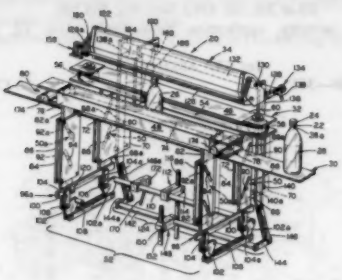
ADJUSTABLE BOTTLE CONVEYING APPARATUS

Nelson Franks, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio 43666, Ohio

Filed Jun. 19, 1981, Ser. No. 275,092
Int. Cl.³ B65B *53/06*
U.S. Cl. 53—557 **11 Claims**

8. An apparatus for heat shrinking tamperproof bands onto the necks of containers and successively moving and rolling the containers about their vertical axis, comprising:
a. means for serially conveying containers in a vertical position along a defined path;
b. frictional means for engaging opposed portions of vertical side walls of the containers for rolling the containers about their vertical axes as they are conveyed along the defined path of travel;

c. power driven means for moving said frictional engaging means towards and away from the defined path of travel for automatically accommodating containers of various sizes;



d. heating means directed towards the tamperproof bands and disposed along the defined path of travel whereby the tamperproof bands are uniformly heated and shrunk onto the necks of the containers; and

e. power means for pivotally moving said heating means away from the path of travel of said conveying means.

4,464,885

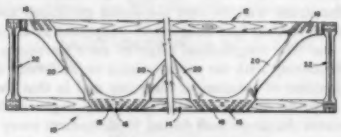
TRUSS ASSEMBLY AND ATTACHMENT MEMBER FOR USE WITH TRUSSES

Joaquin J. Palacio, and Carlos C. Cristobal, both of Miami, Fla., assignors to Gang-Nail Systems, Inc., Miami, Fla.

Continuation-in-part of Ser. No. 423,252, Sep. 24, 1982. This application Jan. 7, 1983, Ser. No. 456,359

Int. Cl.³ E04C *3/02*

U.S. Cl. 52—693 **4 Claims**



1. An attachment member adapted for connection of two pieces of spaced apart wood comprising:

(a) first and second connecting plates disposed at opposite ends of an intermediate leg section, said connecting plates each having two sides and a plurality of sharp projections extending generally perpendicular to the connecting plates from one of the sides, said connecting plates being disposed in the same plane; and

(b) said intermediate leg section having two sides and at least one projection extending from a side opposite the side of the connection plate from which the sharp projections project and extending substantially the entire length of the said intermediate leg section between said connecting plates, the height of said projection being greatest in the proximity of said connecting plates and the smallest in the center of said intermediate leg section between said connecting plates and said intermdiate leg section having a pair of side flanges attached to and projecting from said intermediate leg section on the outside edges of said intermediate leg section and extending in the opposite direction from the projection, the depth of said side flanges varying throughout their length with the smallest depth of the side flanges being in the proximity of said connecting plates and the greatest depth being in the proximity of the midpoint of said flanges located between the connecting plates, the height of said projection and the depth of said side flanges varying substantially continuously throughout the length of said projection and side flanges, respectively.

4,464,886

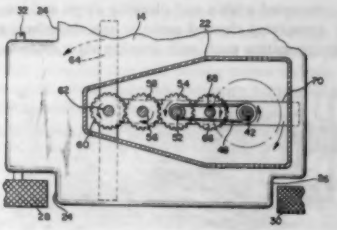
MULTIBLADE ROTARY LAWNMOWER

Joseph F. Carter, 567 Tremont St., Rehoboth, Mass. 02967

Filed May 19, 1980, Ser. No. 151,424

Int. Cl.³ A01D *35/264*

U.S. Cl. 56—13.8 **3 Claims**



1. A multiblade rotary lawnmower for cutting vegetation, comprising a frame, wheels operatively mounted on said frame adjacent to the front and rear thereof for moving said frame in a forwardly direction and for supporting said frame above the surface over which said lawnmower travels, a first elongated blade member mounted for rotation beneath said frame and spaced upwardly from said surface, a second elongated blade member mounted for rotation below said frame and adjacent to and directly behind said first blade member and in substantially the same horizontal plane thereof, spaced vertical shafts mounted on said support, each of said blade members being secured to a vertical shaft for rotation thereby, said shafts and blade members secured thereto being disposed in spaced tandem aligned relation, the longitudinal axis of said second blade member being disposed at 90° in angular relation with respect to the longitudinal axis of said second blade member, said vertical shafts on which said blade members are mounted being located relative to each other such that when the blade members are disposed at right angles to each other, an outer end of one blade member is located in close adjacent relation with respect to a longitudinal edge of the other blade member, wherein the blade members closely overlap in the rotating movement thereof, so that the swath of said vegetation as cut by said first blade members is continuously fine-cut by said second blade member upon forward movement of said lawnmower, the length of each blade member being slightly less than the width of the frame on which said blade members are mounted, so that the swath of cut of each blade member is substantially the same as the width of the frame, and means mounted on said frame and interconnected to said vertical shafts for rotating said shafts and the blade members interconnected thereto at the same angular velocity and in opposite directions.

4,464,887

METHOD OF CLEANING THRESHED GRAIN IN A COMBINE

Frans J. G. C. Decoene, Zedelgem, and Gilbert J. I. Strubbe, Loppem-Zedelgem, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,989

Int. Cl.³ A01F *12/44*

U.S. Cl. 56—16.5 **15 Claims**

1. A method of cleaning threshed grain in a combine harvester comprising the steps of:

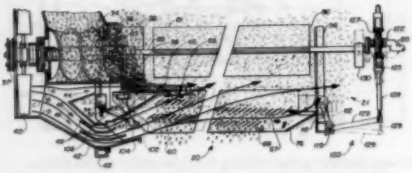
consolidating the threshed grain discharged from a threshing and separating mechanism in said combine into an infeed mechanism;

conveying said threshed grain by said infeed mechanism into an axial opening extending through a cleaning cylinder rotatable along an axis of rotation;

feeding said threshed grain radially outwardly from said infeed mechanism into a plurality of elongated cleaning shoes mounted around the circumference of said cleaning cylinder and extending generally parallel to said axis of rotation;

rotating said cleaning cylinder at a speed sufficient to impart centrifugal forces on said threshed grain in said cleaning shoes to urge said grain radially outwardly through sieves mounted within said cleaning shoes and having openings permitting cleaned grain to pass therethrough;

reciprocating each said cleaning shoe independently of the



other said cleaning shoes in a generally axial direction inclined inwardly toward said axis of rotation as it extends rearwardly simultaneously with said rotating step, to convey said threshed grain rearwardly away from said infeed mechanism along said axially extending cleaning shoes and to help cleaned grain pass through said sieve openings;

creating a flow of air rearwardly through said cleaning cylinder, simultaneously with said rotating and reciprocating steps, to clean unwanted residue in said threshed grain by making said residue airborne;

collecting cleaned grain passing radially outwardly from said cleaning shoes for transfer to a storage tank; and

discharging unwanted residue rearwardly from said cleaning cylinder through said axial opening in an airborne state.

4,464,888

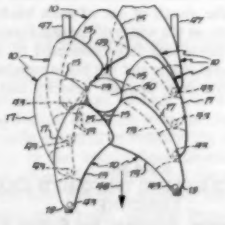
COLLECTOR LEAF CONSTRUCTION FOR HARVESTING MACHINE

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed May 7, 1982, Ser. No. 375,738

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **17 Claims**



1. A collector leaf construction for a harvesting machine comprising a generally planar body portion having an inner end, an integral leading edge, a trailing edge, an outer edge extending between said integral leading edge and said trailing edge, said integral leading edge being concave substantially throughout its entire length, and pivot mounting means on said inner end for mounting a pivot member for pivotally mounting said harvester leaf on a harvesting machine.

4,464,889

BALING MACHINE EMPLOYING A ROTARY FEEDING AND COMPRESSING DEVICE

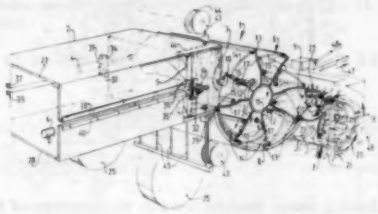
Johannes M. W. Weelink, No. 10 Brandersdijk, 7136 KV Zieuwent, Netherlands

Filed Jul. 30, 1982, Ser. No. 403,364

Claims priority, application Netherlands, Aug. 12, 1981, 8103783

Int. Cl.³ A01D *39/00*

U.S. Cl. 56—341 **18 Claims**



1. A device for compressing into a packet a mass of stalks, stems, blades or another more or less loosely coherent mass, for example, hay characterized by a stock container having an inlet opening, an intermediate wall adapted to move inside said stock container away from and towards said opening and subjected to pressure in the direction towards said opening and a pressing member for supplying under pressure said mass to the inlet opening, the pressing member comprising a cylindrical drum or part thereof having an inlet opening and a longitudinal opening adjoining the inlet opening of the stock container, in which drum is coaxially arranged a drivable rotor having a plurality of substantially radially extending partitions, in that at or near the free longitudinal edge of each partition is arranged a displacer adapted to swing about an axis parallel to said edge and having an active pressing face adapted to swing towards the drum wall, in that the radial partitions and the displacers are formed and adapted to cooperate in a manner such that the free longitudinal edge of each partitions is in sealing relationship with the partition next to the former opposite the direction of rotation of the rotor and in that there is provided a guide member which gradually urges each displacer towards the drum wall during its movement away from the inlet opening of the drum up to the longitudinal opening thereof.

4,464,890

INTAKE REEL FOR AGRICULTURAL MACHINE

Georg Scholtissek, Neustadt, and Peter Grohmann, Bad Schandau, both of German Democratic Rep., assignors to Veb Kombinat Fortschritt Landmaschinen, Neustadt in Sachsen, German Democratic Rep.

Filed Nov. 22, 1982, Ser. No. 443,617

Claims priority, application German Democratic Rep., Dec. 12, 1981, 235622

Int. Cl.³ A01D *87/00*

U.S. Cl. 56—364 **11 Claims**

1. An intake for an agricultural machine, the intake comprising:

a frame adapted to travel along the ground in a travel direction;

a transversely mounted feeder extending horizontally and transversely to the direction on the frame;

a pair of end mounts on the frame and a center mount transversely flanked thereby;

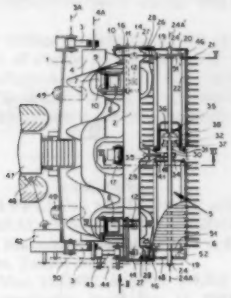
support means carrying the mounts on the frame for up and down movement generally tangential of the transverse feeder;

a jointed reel centered on and rotatable about at least one horizontal reel axis extending transverse to the direction

through the mounts, the reel having outer ends journaled in the end mounts, a jointed center journaled in the center mount and axially subdividing the reel into two halves, and radially extending tines;

respective ground-engaging end and center skids vertically displaceable on the frame;

respective end and center link means connecting the end and



center skids to the respective mounts for synchronous vertical movement of the skids with the respective mounts;

drive means for rotating the reel about the reel axis and thereby picking crop up off the ground; and

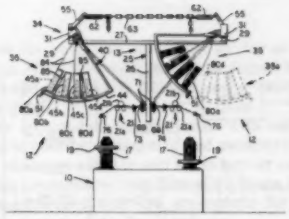
an array of strippers fixed on the frame and spacedly surrounding the reel between the tines, whereby the picked-up crop is pulled off the tines by the strippers.

4,464,891

YARN PROCESSING MACHINE AND CREEL ASSEMBLY

W. Judson Manly, Jr., 902 Olive Way, Dalton, Ga. 30720

Filed Apr. 17, 1979, Ser. No. 31,019
Int. Cl.³ B65H *49/16*; D01H *13/04*
U.S. Cl. 57—90 **10 Claims**



3. A combination ring twister machine or like yarn processing machine and overhead creel assembly for holding a plurality of creel bobbins of yarn or other yarn packages from which yarn can be drawn from the creel assembly into the twister machine, said combination comprising:

a yarn processing machine base structure;

creel structure positioned on top of said base structure;

a plurality of spindles located on each of two opposite sides of said base structure;

a pull roll assembly associated with said spindles;

a bobbin carriage including an arcuate creel arm associated with each of said spindles, each said creel arm being suspended from said creel structure by a swinging bar pivotable about a first stationary horizontal axis mounted to said creel structure, and each said creel arm being capable of holding a plurality of yarn packages, said bobbin carriage being movable through a circular arc about said horizontal axis as defined by the movement of said swinging bar from a first up position to a second down position;

spring biasing means for biasing said bobbin carriage toward said up position and for holding said bobbin carriage in said down position; and

means for maintaining the length of the yarn path along which yarn must extend from yarn packages in said bobbin carriage to said pull roll assembly with said bobbin carriage in said up position approximately equal to the length of said yarn path with said bobbin carriage in said down position,

whereby said pull rolls can be operated to draw yarn from the yarn packages with said carriage in any position between and including said up position and said down position; further provided that said biasing means include,

a rocker pivotable about a second stationary horizontal axis positioned on said creel structure;

a link attached at one of its ends to said swinging bar at a first hinge point and at its other end to said rocker at a second hinge point,

a spring means for attaching at one of its ends to said rocker at a spring attachment point, said second horizontal axis acting as a fulcrum relative to said spring attachment point and said second hinge point,

whereby said spring means pulls continually said rocker to pivot said rocker about said second horizontal axis thus pulling on said link to draw said swinging bar upward and to thus draw said bobbin carriage to said up position.

8. A creel assembly comprising:

a first stationary horizontal axis for mounting above a yarn processing machine;

a support framework for supporting said stationary axis above the yarn processing machine;

a creel arm assembly suspended from said axis, said creel arm assembly being configured for carrying a plurality of yarn packages and being pivotable through a circular arc about said axis;

yarn guide means disposed adjacent said axis for guiding yarn from said yarn packages to said yarn processing machine; and

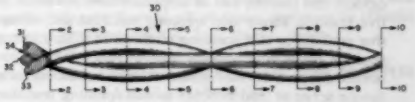
counterbalancing means for resiliently holding said creel arm assembly at each of the terminal positions of said arc, including a counterbalancing overcenter linkage.

4,464,892

METALLIC CABLE FOR REINFORCING ELASTOMERIC ARTICLES

Jacob Kleijwegt, Arlon, Belgium, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 11, 1983, Ser. No. 474,399
Int. Cl.³ D07B *1/00*
U.S. Cl. 57—212 **3 Claims**



1. A metallic cable for reinforcing elastomeric articles comprising:

(a) a single strand of two filaments twisted together in a first direction; and

(b) not more than one single filament helically disposed around said strand in a direction that is opposite to said first direction and has a pitch that is not greater than one and one-half times the lay length of said strand, said single filament having a diameter that is equal to or greater than the diameter of the filaments of said strand, said single filament having substantially the same physical properties as the filaments of said strand.

4,464,893

SPINNING MACHINE, IN PARTICULAR RING SPINNING MACHINE

Heinz Zingel, Beringen, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

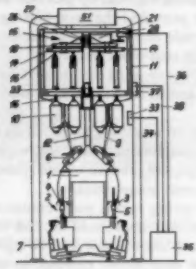
PCT No. PCT/EP81/00158, 371 Date Jun. 2, 1982, 102(e) Date Jun. 2, 1982, PCT Pub. No. WO82/01385, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 7, 1981, Ser. No. 387,833

Claims priority, application Switzerland, Oct. 14, 1980, 7647/80

Int. Cl.³ D01H *9/10, 9/18*

U.S. Cl. 57—267 **11 Claims**



1. A spinning machine, in particular a ring spinning machine, comprising:

a multitude of spinning locations arranged in a row;

a multitude of roving bobbin support devices;

each said roving bobbin support device being operatively associated with one of said spinning locations and serving to hold one roving bobbin;

a predetermined number of mobile storage devices;

said roving bobbin support devices forming groups of roving bobbin support devices;

each said group of roving bobbin support devices being arranged at a related one of said mobile storage devices and being operatively associated with adjacent ones of said spinning locations;

a predetermined number of transport devices;

drive means for operating said transport devices;

said transport devices being drivable by said drive means to travel along said spinning machine;

each said transport device comprising at least one elevator device; and

at least one of said mobile storage devices being operatively associated with said elevator devices of said transport devices such that at least one of said mobile storage devices can be gripped by individual ones of said elevator devices and thereby can be displaced between an inoperative position above said spinning machine and an operative position in said spinning machine in which operative position the roving bobbins held by said group of roving bobbin support devices at said at least one mobile storage device serve as feed bobbins in said spinning machine.

4,464,894

SPUN-LIKE CONTINUOUS MULTIFILAMENT YARN

James C. Leininger, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 881,478, Feb. 27, 1978, Pat. No. 4,170,867. This application Apr. 26, 1979, Ser. No. 33,656

Int. Cl.³ D02G *3/38, 1/18*

U.S. Cl. 57—288 **5 Claims**

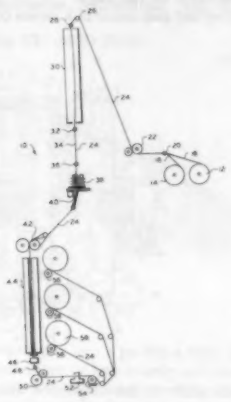
1. A process for producing a continuous multifilament yarn comprising:

simultaneously draw texturing two partially oriented feeder yarns having different amounts of orientation from spinning, wherein said draw texturing step is characterized further to include the steps of:

plying the two feeder yarns together;

heating the plied feeder yarns;

drawing the heated plied feeder yarns;



cooling the plied feeder yarns;

frictioning texturing the plied feeder yarns as a single yarn;

reheating the friction textured yarn;

entangling the reheated textured yarn; and cooling the textured yarn.

4,464,895

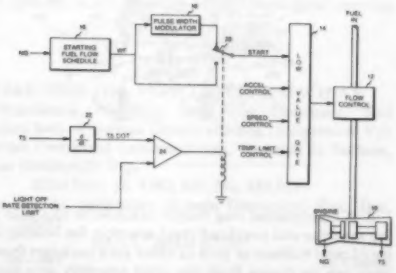
GAS TURBINE ENGINE STARTING TECHNIQUE AND CONTROL

Terry Morrison, Vernon, Conn., and Jay D. Meador, Indianapolis, Ind., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed May 26, 1982, Ser. No. 382,161

Int. Cl.³ F02C *7/26, 9/28*

U.S. Cl. 60—39.141 **4 Claims**



1. An improved method for causing the ignition of a gas turbine engine, the engine including burners having fuel nozzles and igniters associated therewith, said method including the steps of:

initiating the delivery of pressurized fuel to the fuel nozzles;

varying the average fuel flow rate in accordance with a pre-determined starting schedule, the starting schedule being commensurate with a fuel having a relatively low viscosity;

simultaneously cyclically modulating the fuel flow rate to thereby cyclically vary the pressure drop across the fuel nozzles, the modulation varying the fuel flow rate be-

tween a level below that called for by the starting schedule and a level above that called for by the starting schedule, maximum fuel atomization occurring with the greatest pressure drop;

monitoring a temperature commensurate with the engine exhaust;

determining the rate of change of the monitored temperature;

comparing the temperature rate of change with a reference; and

terminating the cyclical modulation of the fuel flow rate when the rate of change of the monitored temperature exceeds the reference and thus indicates ignition of the fuel, the fuel flow rate varying in accordance with the starting schedule subsequent to termination of the cyclical modulation.

4,464,896

SYSTEM FOR SUPPLYING SECONDARY AIR FOR AN INTERNAL COMBUSTION ENGINE

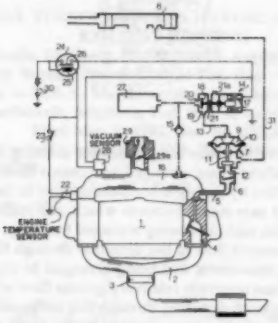
Masaharu Kubota, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,542

Claims priority, application Japan, Apr. 11, 1981, 56-54720

Int. Cl.³ F02B *75/10*; F01N *3/22*

U.S. Cl. 60—290 **8 Claims**



1. A system for supplying secondary air for an emission control system of an internal combustion engine having an induction passage, an exhaust passage, and a catalytic converter, comprising:

a secondary air conduit communicated with said exhaust passage at a position upstream of said catalytic converter;

first valve means provided in said secondary air conduit for preventing counterflow, said first valve means having an inlet communicated with the atmosphere for inducing secondary air into said exhaust passage;

second valve means for opening said inlet of said first valve means;

valve actuator means for actuating said second valve means, said valve actuator means comprising a vacuum chamber and a diaphragm defining said vacuum chamber and connected to said second valve means;

engine temperature detecting means for producing an output signal when the temperature of said engine is below a predetermined temperature;

electric circuit means responsive to said output signal of said engine temperature detecting means effective to operate said valve actuator means for opening said inlet, said electric circuit means including an electromagnetic valve for communicating said vacuum chamber with said induction passage for applying the vacuum in the induction passage to said vacuum chamber, and

a timer including a switch adapted to be operated by said output signal of said engine temperature detecting means for closing the switch for a predetermined time for operating said electromagnetic valve.

4,464,897

EXHAUST MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE PROVIDED WITH A TURBOCHARGER

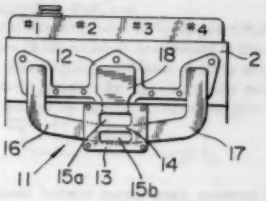
Ken Yamane, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 9, 1982, Ser. No. 356,270

Claims priority, application Japan, Mar. 10, 1981, 56-34189

Int. Cl.³ F02B *27/02*; F01N *7/10*

U.S. Cl. 60—313 **3 Claims**



1. An exhaust manifold for a four-cylinder in-line internal combustion engine, being connected between a cylinder head and a turbocharger, which comprises:

(a) a first exhaust duct communicating with a first cylinder;

(b) a second exhaust duct communicating with a fourth cylinder firing non-sequentially with respect to said first cylinder, said first and second exhaust ducts being of substantially equal length;

(c) a third exhaust duct communicating with the remaining second and third cylinders; and

(d) a split-type turbocharger-mounting flange having a pair of exhaust gas outlets divided by a horizontal partition into an upper opening portion and a lower opening portion (**15***b*) of substantially equal dimension to each other for connecting said first and second exhaust ducts together to the turbocharger through one of the upper and lower opening portions thereof and connecting said third exhaust duct to the turbocharger through the other of the upper and lower opening portions thereof,

said split-type mounting flange containing the upper and lower opening portions facilitating the equal-length arrangement of exhaust ducts to obtain an exhaust gas pressure resonance effect.

4,464,898

HYDRAULIC POWER SYSTEM

Yukio Aoyagi, Ibaraki; Shuichi Ichiyama, Tsuchiura, and Yasuhiko Murata, Ibaraki, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,934

Claims priority, application Japan, Dec. 27, 1980, 55/187130

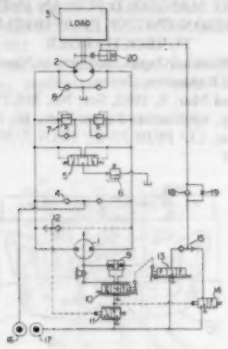
Int. Cl.³ F16D *33/00*

U.S. Cl. 60—436 **5 Claims**

1. A hydraulic power system comprising a variable displacement hydraulic pump, a hydraulic motor driven by said hydraulic pump for actuating a load, said pump and motor being connected to constitute a closed hydraulic circuit, hydraulic servo means for controlling the displacement volume of said pump, and motor stopping means including brake means adapted to release the motor from a braked condition when a control pressure from a hydraulic fluid source is received, wherein the hydraulic power system comprises:

a control valve responsive to a main line pressure in said closed hydraulic circuit for controlling a hydraulic fluid supply to said servo means to prevent said main line pressure from substantially exceeding a predetermined level;

first pressure transmission control means interlocked with input means of said servo means for transmitting said control pressure to said brake means when said input means is actuated; and



second pressure transmission control means responsive to the pressure of a hydraulic fluid supply to said servo means on the output side of the control valve for transmitting said control pressure to said brake means when said supply pressure is substantially lower than a normal supply pressure of the hydraulic fluid source.

4,464,899

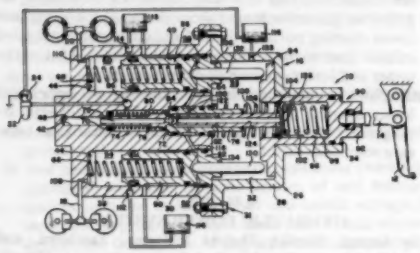
BRAKE BOOSTER

Lawrence R. Myers, South Bend, Ind.; Robert F. Gaiser, Stevensville; Larry G. Lohraff, Berrien Springs, both of Mich., and Lloyd G. Bach, South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 23, 1982, Ser. No. 371,154

Int. Cl.³ B60T *13/12*

U.S. Cl. 60—547.1 **6 Claims**



1. A brake booster having a housing with a first bore receiving a first piston and a second bore receiving a second piston, the pistons cooperating with the housing to substantially define first pressure and working chambers and second pressure and working chambers, respectively, the pressure chambers communicating via housing outlet ports with respective brake circuits the working chambers communicating with valve means disposed within the housing, the valve means being operable during a brake application to control communication of fluid pressure from a housing inlet to the working chambers, and an input assembly extending into the housing and cooperating with the valve means to control operation of the same, characterized in that said first and second bores are arranged in parallel relation within said housing and said valve means being operable during braking to communicate fluid pressure to both of said working chambers, said valve means being disposed within said housing substantially in alignment with and intermediate said first and second pistons to compactly dispose said pistons and valve means within said housing said housing defining a third bore receiving said valve means and said housing includes at least two passages extending from the third bore to the first and second bores, respectively, to provide fluid communication from said valve means to both of said working chambers, said valve means including a seat with an axially extending opening, said input assembly being movably disposed within said axially extending opening and said seat including a restricted aperture communicating with said passages.

4,464,900

FLOW VALVE

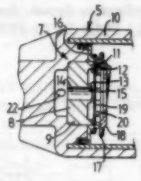
Wilfred N. Bainbridge, Overthorpe, England, assignor to Automotive Products plc, Leamington Spa, England

Filed Apr. 28, 1982, Ser. No. 372,753

Claims priority, application United Kingdom, Apr. 30, 1981, 8113368

Int. Cl.³ F15B *7/00*; F16K *15/14*

U.S. Cl. 60—591 **6 Claims**



1. A control valve comprising a member defining an orifice for fluid, a resilient plate arranged to control flow of fluid through the orifice by flexing movement relative to the orifice, first and second stop means between which said resilient plate is freely movable, said plate being arranged to engage said first stop means to control flow in one direction through the orifice by said flexing movement and being arranged to engage the second stop means to permit relatively greater flow when fluid flows in the opposite direction through the orifice and a port for the fluid arranged to be uncovered by the plate when the plate engages the second stop means so that fluid can pass at a greater rate of flow directly from the orifice to the port, the plate being formed with an aperture through which fluid passes when the plate engages the first stop means during flow of fluid from the port to the orifice.

4,464,901

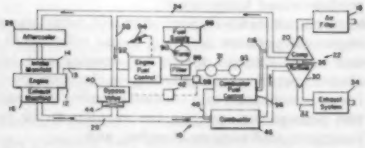
TURBOCHARGER COMBUSTOR SYSTEM

Robert J. Kobayashi, Rancho Palos Verdes; James H. Nancarrow, Torrance, both of Calif., and Jeffrey L. Alger, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 142,538, Apr. 21, 1980, abandoned, which is a continuation of Ser. No. 855,048, Nov. 25, 1977, abandoned. This application Sep. 1, 1982, Ser. No. 413,640

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—606 **38 Claims**



1. In an internal combustion reciprocating engine having a

turbocharger driven by exhaust gases to provide compressed charge air to the engine, a combustor system comprising exhaust conduit means coupled between the engine and the turbocharger; a combustor coupled along said exhaust conduit means for in-line passage of engine exhaust gases; means for controllably supplying fuel to the combustor generally in inverse proportion to charge air pressure; bypass means coupled between the turbocharger and said exhaust conduit means upstream of said combustor for selectively bypassing to the combustor a surplus portion of the turbocharger charge air flow around the engine and for mixing the surplus portion of bypass air flow with exhaust gases upstream of the combustor during relatively low speed engine operation; valve means for selectively closing said bypass means for preventing bypass air flow around the engine; means for operating said valve means for opening and closing said bypass means; and fuel injector means for atomizing the fuel supplied to the combustor using a portion of the gases passing through the combustor to form a substantially atomized gas-fuel cloud having axial and circumferential components of velocity to permit combustor operation with sustained combustion generally independent of operation of said valve means to supplement the energy level of the gases passing through the combustor; said combustor including means to sustain combustion without bypass charge air flow during relatively high speed engine operation.

4,464,902

PLURAL TURBOCHARGERS HAVING A COMMON EXHAUST HOUSING

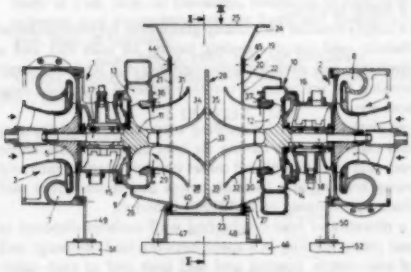
Hans Mendle, Friedberg; Rudolf Bandel, Augsburg, and Hanns-Günther Bozung, Neusäss, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,888

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108288

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—612 **13 Claims**



1. A twin turbo-supercharger unit forming a component of an internal-combustion engine having two supercharger units of substantially identical construction, each including a radial-flow compressor and a radial-flow turbine mounted coaxially and driven to provide opposite directions of flow by power provided from the exhaust gas output of said engine, into a common turbine discharge housing disposed between the two exhaust-driven turbo-superchargers and serving also for connecting the two superchargers together, said twin turbo-supercharger further having an improvement which comprises:

supporting elements **(47,48)** rigidly fastening said turbine discharge housing to a mounting component body **(46)** provided laterally on said engine;

support brackets **(49,50)** extending laterally from said engine for supporting said respective turbo-superchargers **(1,2)** of the twin unit at a distance from said engine in a floating manner from portions **(51,52)** of said engine providing mounting surfaces on a side of said engine;

said turbine discharge housing **(19)** consisting of a plurality of parts, including a box-shaped housing mid-portion **(20)** having side apertures centered on the axis of the superchargers and a funnel-shaped discharge portion **(24)** and two housing side parts **(26,27)** fastened to said housing mid-portion **(20)** around the edges of the respective side apertures thereof and also fastened to the respective casings **(13,14)** of said turbines;

a guiding structure within said turbine discharge housing **(19)** comprising guiding wall means **(33,34,35,40,41,42,43)** including a median wall **(33)** for separately leading the respective gas streams issuing from said radial turbines towards said median wall, and

diffuser horns **(31,32)** at the respective outputs **(29,30)** of said radial turbines **(9,10)** which flare outward in the direction of flow for cooperating with said guiding structure to produce a static pressure for improving the recovery of exhaust gas energy by said turbo-superchargers.

4,464,903

MAGNETIC REFRIGERATOR

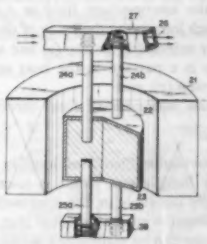
Hideki Nakagome, Yokohama, and Takasu Hashimoto, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 5, 1983, Ser. No. 455,655

Claims priority, application Japan, Jan. 22, 1982, 57-7526

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **9 Claims**



1. A magnetic refrigerator for cooling an object of cooling, comprising:

a working material radiating heat when a magnetic field is applied thereto and absorbing heat when the magnetic field is removed therefrom;

magnetic field generating means for selectively applying or removing the magnetic field to or from the working material;

at least one directional heat pipe disposed between the working material and the object of cooling, whereby heat from the object of cooling is transmitted to the working material when the working material absorbs the heat, and whereby heat from the working material is prevented from being transmitted to the object of cooling when the working material radiates the heat; and

heat absorbing means for absorbing the heat radiated from the working material,

wherein said directional heat pipe includes a sealed pipe positioned vertically and having a lower portion connected to the object of cooling and an upper portion connected to the working material, and a working fluid sealed in the sealed pipe and evaporating at a given temperature to transmit heat upward.

4,464,904

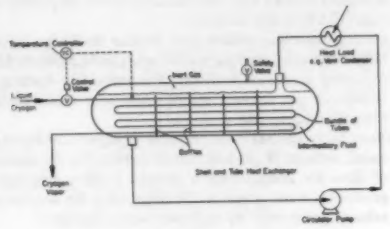
PROCESS FOR THE TRANSFER OF REFRIGERATION

Frederic N. Steigman, Ossining, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 19, 1983, Ser. No. 496,080

Int. Cl.³ F17C 7/02

U.S. Cl. 62—52 **1 Claim**



1. In a process for the transfer of refrigeration from a source of liquid cryogen to a heat load via an intermediary fluid comprising the following steps:

(a) introducing the liquid cryogen from its source into the tube side of a shell and tube heat exchanger;

(b) passing the intermediary fluid through the shell side of the shell and tube heat exchanger referred to in step (a); and

(c) passing the intermediary fluid from step (b) to heat exchange means, which is in a heat transfer relationship with the heat load,

the improvement comprising:

(i) maintaining the intermediary fluid in a closed loop, a portion of which loop is the shell side of the shell and tube heat exchanger referred to in step (a) and another portion of which loop is a passage in the heat exchange means referred to in step (c); and

(ii) circulating the intermediary fluid through the closed loop

wherein

(A) there is provided in the closed loop, in addition to the intermediary fluid, a gas, which is essentially inert to, and essentially insoluble in, the intermediary fluid, said gas being present in such an amount that the pressure in the closed loop can be maintained in the range of about 1 to about 2 atmospheres at the operating temperature thereof;

(B) the intermediary fluid is a liquid of such viscosity that it is capable of being circulated through the closed loop at the operating temperature and pressure thereof; and

(C) the closed loop has a total volume calculated in accordance with the following formula:

$$\text{volume} = B\left(1 - \frac{CA}{D}\right) / [C(1 - A)]$$

wherein:

$$A = \frac{E - F}{G\frac{H}{J}\left(1 - \frac{F}{KHD}\right)}$$

B = mass of intermediary fluid in the closed loop

C = density of the intermediary fluid at temperature J

D = density of the intermediary fluid at temperature H

E = maximum design pressure for the closed loop within the range set forth in paragraph (A) above

F = vapor pressure of the intermediary fluid at temperature H

G = desired closed loop pressure at temperature J within the range set forth in paragraph (A) above

H = maximum intermediary fluid temperature

J = minimum operating temperature for intermediary fluid

K = gas constant for vapor of the intermediary fluid, and

all temperatures and pressures are in absolute units.

4,464,905

CRYOSORPTION PUMP

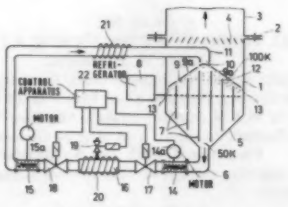
Hans Dittrich, Karlsruhe; Hartmut Frey, Esslingen, and Ralf-Dieter Penzhorn, Bruchsal, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,669

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226785

Int. Cl.³ B01D 8/00

U.S. Cl. 62—55.5 **10 Claims**



1. A cryosorption pump comprising:

(a) a pump housing;

(b) a supply conduit for guiding granulated sorption material therein; said supply conduit having an inlet end and a discharge end; said discharge end merging into said pump housing for introducing sorption material into said pump housing;

(c) an outlet conduit for guiding sorption material therein; said outlet conduit having an inlet end and a discharge end; said inlet end of said outlet conduit opening into said pump housing at a location below and spaced from said discharge opening of said supply conduit;

(d) a plurality of heat conducting wall surfaces disposed in said pump housing in a space between said discharge end of said supply conduit and said inlet end of said outlet conduit; said wall surfaces being spaced from one another for accommodating sorption material therebetween;

(e) a refrigerator operatively connected to said wall surfaces for cooling said wall surfaces to a cryogenic temperature to which the sorption material situated between said wall surfaces is exposed;

(f) a regenerator having an inlet connected to said discharge end of said outlet conduit and an outlet connected to said inlet end of said supply conduit for regenerating sorbent-laden sorption material received from said outlet conduit and for admitting sorbent-free sorption material into said supply conduit;

(g) a first conveyor arranged in said outlet conduit for advancing sorbent-laden sorption material from said pump housing into said regenerator; and

(h) a second conveyor arranged in said supply conduit for advancing sorbent-free sorption material from said regenerator into said pump housing.

4,464,906

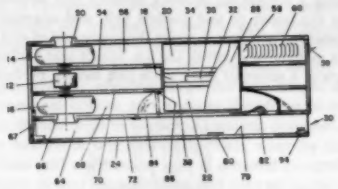
METHODS AND APPARATUS FOR DRYING FINGERNAILS

Joyce Outlaw, Houston, Tex., assignor to J J Enterprises Inc., International, Houston, Tex.

Filed Jul. 1, 1982, Ser. No. 394,116

Int. Cl.³ F25D *17/06*

U.S. Cl. 62—93 **20 Claims**



1. Apparatus for drying polish applied to fingernails, comprising:

a housing having an opening for receiving said fingernails;

a refrigeration unit within said housing for cooling air below room temperature;

blower means for recirculating cooled air within said housing;

a cool air supply duct for directing air past said refrigeration unit, toward said fingernails and away from said opening in said housing; and

a cool air return duct for returning at least a substantial portion of said cooled air directed toward said fingernails to said refrigeration unit.

4,464,907

PROCESS FOR THE OPERATION OF AN ABSORPTION HEAT PUMP CAPABLE OF BIVALENT OPERATION AND ABSORPTION HEAT PUMP FOR IMPLEMENTING THIS PROCESS

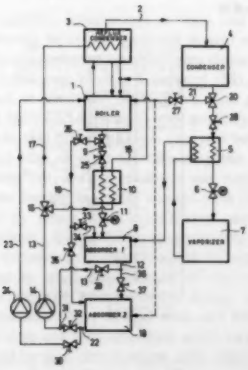
Robert Mack, Heilbronn, and Winfried Buschulte, Neckarsulm, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Fed. Rep. of Germany

Filed Jun. 2, 1983, Ser. No. 500,269

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 32220677

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **12 Claims**



1. Process for the operation of an absorption heat pump capable of bivalent operation, in which in pure heat pump operation the refrigerant driven out in the boiler is fed through a condenser, a refrigerant throttle, and a vaporizer to an absorber, where it is combined with a weak solution fed from the boiler to the absorber through a temperature changer and a solvent throttle, and the strong solution formed is fed through the temperature changer, and optionally through a reflux condenser used to cool the refrigerant stream leaving the boiler, to the boiler, while in pure boiler operation, the refrigerant driven out of the boiler is fed after the condenser directly to the absorber, while the weak solution from the boiler is fed directly to the absorber and the strong solution leaving the absorber is fed directly to the boiler, characterized by the fact that in combined operation, the refrigerant stream is divided after the condenser, and the stream of weak solution leaving the boiler is divided, with one component stream of the refrigerant being fed through the refrigerant throttle and the condenser to a low-pressure absorber, into which one component stream of the weak solution is introduced through the temperature changer and the solvent throttle, while the other component stream of the refrigerant is fed either directly to the boiler or to a high-pressure absorber, to which the other component stream of the weak solution is fed directly in both cases, and that the strong solution from the low-pressure absorber is fed to the boiler through the temperature changer and/or the reflux condenser, while on the other hand, the solution from the high-pressure absorber is fed directly to the boiler.

4,464,908

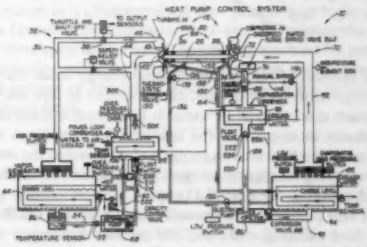
SOLAR-POWERED TURBOCOMPRESSOR HEAT PUMP SYSTEM

Abraham M. Landerman, Storrs; Frank R. Biancardi, South Windsor, both of Conn.; Gorken Melikian, Springfield, Mass.; Maurice D. Meader, Avon, Conn.; Charles E. Kepler, East Hartford, Conn.; Torger J. Anderson, Manchester, Conn., and James W. Sitler, Westfield, Mass., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 12, 1982, Ser. No. 407,539

Int. Cl.³ F25B *27/00*

U.S. Cl. 62—235.1 **30 Claims**



1. A turbocompressor heat pump system, comprising a turbocompressor including a compressor turbine and a power turbine for driving said compressor turbine, a power system connected to said power turbine and including a first working fluid and means for causing expansion of said first working fluid in said power turbine to drive said power turbine, a heat pump system connected to said compressor turbine and including a second working fluid and means for causing said compressor turbine to compress said second working fluid, said second working fluid including a lubricant mixed therewith while said first working fluid is substantially free of any lubricant, said power turbine and said compressor turbine respectively including a power turbine rotor and a compressor turbine rotor together with a common supporting shaft for rotatably supporting said rotors, bearing means for rotatably supporting said shaft, a shaft seal around said shaft between said power turbine rotor and said bearing means, and bearing cooling and lubricating means for circulating said second working fluid and said intermixed lubricant through said bear-

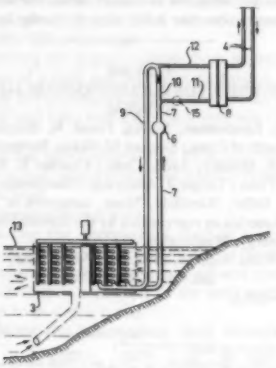
ing means to cool and lubricate said bearing means, said bearing cooling and lubricating means including supply means for supplying said second working fluid and said intermixed lubricant from said heat pump system to said bearing means, and return means for returning said second working fluid and said intermixed lubricant from said bearing means to said heat pump system, said shaft seal and said bearing cooling and lubricating means being constructed to prevent said second working fluid and said intermixed lubricant from mixing with said first working fluid.

4,464,909

METHOD OF RECOVERING THERMAL ENERGY BY HEAT PUMP FROM SEA WATER AND COMPARABLE WATER MASSES

Lennart K. Litzberg, Stockholm, Sweden, assignor to Skandinavisk Installationssamordning AB (SISAM AB), Stockholm, Sweden

Filed Mar. 21, 1983, Ser. No. 477,636
Int. Cl.³ F24D *21/04*
U.S. Cl. 62—260 **3 Claims**



1. A method of recovering thermal energy from sea water and comparable water masses, characterized in that sea water is supplied at a constant or variable flow from a place of suitable choice in respect of the temperature conditions in the water mass to a heat exchanger (3) and returned to the sea, that a heat carrying medium is pumped through the heat exchanger (3) and a supply conduit (7,11) to an evaporator of a per se known heat pump (8) and through a return conduit (12,9) again to the heat exchanger (3), and the medium is pumped with a flow exceeding the medium flow through the evaporator, that a part of the medium is directed from the supply conduit (7) past (10) the evaporator and to the return conduit (9), and that the flow of the sea water is of a size at least equal to the medium flow.

4,464,910

ICE HARVESTING MACHINE

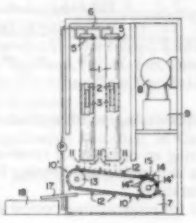
James Stultz, Astatula, Fla., assignor to Crosby Commercial Refrigeration Systems, Inc., St. Petersburg, Fla.

Filed Aug. 18, 1982, Ser. No. 409,087
Int. Cl.³ F25C *5/16*
U.S. Cl. 62—320 **4 Claims**

1. In an ice harvest machine operating on a system of feeding a refrigerant into the annular space between two vertically arranged concentric pipes adapted to having water flow down the outside surface of the outer pipe and also down the inside surface of the inner pipe until a sufficient thickness of ice has been formed and then replacing the refrigerant with a warm fluid until sufficient thawing of the ice has been achieved to permit the ice to slide downward, the improvement comprising:

(a) a perforated endless belt positioned below the ice forming system in such a manner that the lower end of ice will strike the belt, the perforations of said endless belt being of sufficient size to allow the free passage of water therethrough; and

(b) a series of rigid protrusions spaced on said endless belt, reaching a substantial distance upward and substantially across the width of said endless belt, and adapted upon movement of said belt to strike the lower end of said ice in such a manner as to break the ice, which said endless belt comprises a series of links, each link having perforations



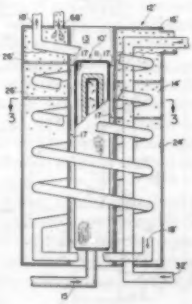
therein and having a rigid bar extending upward and reaching substantially across the width of said link, each link having protrusions spaced on the two opposite sides parallel to said bar and arranged so that the protrusions of one link dovetail with the protrusions of an adjacent link, each protrusion on one said side having an opening therein registered with each other and with dovetailed protrusions of an adjacent link and adapted to receive a long cylindrical rod through the registered openings in said dovetailed protrusions so as to provide a flexible connection between said links, each of the series of links being so connected to the two adjacent links to form the endless belt.

4,464,911

ABSORPTION REFRIGERATION CYCLE GENERATOR

Laurence B. Craig, Glen Cove, and Alfred J. Farina, Baldwin, both of N.Y., assignors to Thermocatalytic Corporation, Williston Park, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,877
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—476 **4 Claims**



1. For use in an absorption refrigeration cycle of the type having an operational mode in which there is transfer of heat resulting from the combustion of an air-gas fuel mixture to a refrigerant fluid, an improved generator for achieving said heat transfer comprising, in combination, a housing con-

structed of a cooperating pair of external and internal walls bounding a compartment therebetween serving as a storage tank for a body of said refrigerant fluid, and said internal wall being located centrally of said storage tank and being of a cylindrical shape to bound a correspondingly cylindrically-shaped internal compartment serving as a combustion chamber within said body of refrigerant fluid, and a cylindrically-shaped combustion unit having a hollow core and of the type fueled by an air-gas mixture of an appropriate selected size and having an operative position disposed in said internal combustion chamber for transmitting heat to said refrigerant fluid in said storage tank, said combustion unit being formed of a fibrous construction material bounding said hollow core and having a porosity effective to permit said air-gas mixture to pass from said hollow core radially therefrom to an exterior surface thereof so as to support a catalytic combustion of said air-gas mixture at said external surface, whereby the flow of heat from said combustion unit is directed circumferentially therefrom as heat radiated from said external surface and also as hot gases issuing therefrom, and is thereby efficiently transferred to said fluid contents of said storage tank which is in encircling relation about said combustion unit.

4,464,912

KNITTING MACHINE

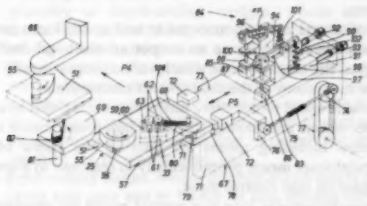
Eberhard Leins, Filderstadt; Manfred Walter, Aichtal, and Willie Gaiser, Gäufelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 419,929

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138337

Int. Cl.³ D04B *7/00*

U.S. Cl. 66—77 **23 Claims**



1. Knitting machine comprising: at least one needle bed; knitting tools having butts and mounted in said needle bed to be raised and drawn-down; at least one cam element (25) movable past said butts and having a support (51), a clamping element (57) and at least one draw-down cam part (33) for influencing said butts and thereby at least partially draw-down said knitting tools, said drawing-down cam part being movably mounted on said cam element for adjusting the depth up to which the knitting tools are drawn-down, said support and said clamping element having mutually aligned slots (59,60) which are surrounded by edges, said draw-down cam part being fastened to a fastening means (61) which projects through said slots, and said support and said clamping element being arranged such that by relative movement of said clamping elements and said support said fastening means is optionally clamped between said edges of said slots and thus locked or movable in said slots and thus unlocked; and a switching apparatus to be passed by said cam element, said switching apparatus having means for locking and unlocking said fastening means and means for adjusting said draw-down cam part when said fastening means is unlocked by causing movement thereof in said slots.

4,464,913

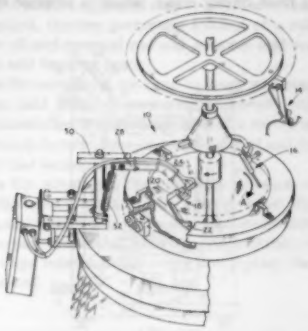
KNITTING MACHINE CONTROL SYSTEM

Joel C. Rosenquist, Kernersville; Kenneth J. Thompson, Lexington, and Wayne G. Foster, Advance, all of N.C., assignors to Consolidated Foods Corporation, Winston-Salem, N.C.

Filed Jan. 12, 1983, Ser. No. 457,286

Int. Cl.³ D04B *35/20*

U.S. Cl. 66—166 **9 Claims**



8. In a system for sensing and indicating defects in fabric being knit on a circular knitting machine provided with an electrical stop motion, said system including means for generating a signal responsive to the detection of a defect in a rotating fabric tube being knit as the fabric moves in a given direction past a given point, said signal generating means including a sensor head at said given point positioned in floating contact with said fabric tube as the tube is being knit, and fiber optic means for receiving signals from said signal generating means, said logic circuit means including means for sensing the concentration of signals and for activating the knitting machine electrical stop motion to stop the knitting machine upon receipt of a prescribed number of signals from said signal generating means in a predetermined time period, said logic circuit means further including means activated for a prescribed period of time upon restarting of the knitting machine for preventing activation of said electrical stop motion until a predetermined amount of knit fabric absent of defects has moved past said sensor head.

4,464,914

AUTOMATIC WASHER

Fumio Torita, Nagoya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 14, 1982, Ser. No. 388,506

Claims priority, application Japan, Jun. 19, 1981, 56-95594; Jun. 22, 1981, 56-96849

Int. Cl.³ D06F *23/04*

U.S. Cl. 68—23.5 **23 Claims**

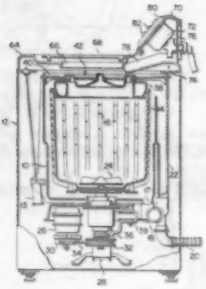
1. An automatic washer for automatically carrying out in succession a plurality of steps of a washing operation including a specific centrifugal dehydration-rinsing step in which fresh water is sprayed onto washed material so as to simultaneously perform dehydration and rinsing of the washed material, said washer comprising:

(a) rotary basket means, having a pulsator member and an upper opening, for holding material to be washed which is loaded thereinto through the opening throughout the plurality of steps of the washing operation, said rotary basket means further including an inner peripheral wall defining a plurality of holes through which liquid such as water supplied thereinto flows to the outside;

(b) tub means housing said basket means for storing the liquid flowing through the holes of said basket means and for draining that liquid which is discharged through said

holes and onto the washed material by the centrifugal force produced by the rotation of said basket means during said dehydration-rinsing step, said tub means having an upper opening corresponding to the opening of said basket means; and

(c) spraying means immovably disposed to substanially cover said opening of said tub means for temporarily storing fresh rinsing water, which is supplied thereto in



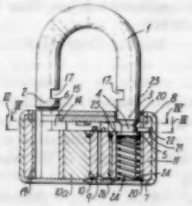
said dehydration-rinsing step, in a substantially still state and for preferentially spraying the stored water, by utilizing free fall of the stored water, evenly at least on that circular region of said basket means rotating to dehydrate the wet washed material which is located along said inner peripheral wall thereof wherein fresh water is effectively sprayed on the washed material being dehydrated in said rotating basket means to thus effectively carry out said dehydration-rinsing step.

4,464,915

PADLOCK

Dolev Moshe, and Bahry Avraham, both of 45 Sokolow St., Holon 58268, Israel

Filed Mar. 16, 1981, Ser. No. 244,063
Claims priority, application Israel, Mar. 25, 1980, 59705
Int. Cl.³ E05B *15/16, 67/04*
U.S. Cl. 70—52 **6 Claims**



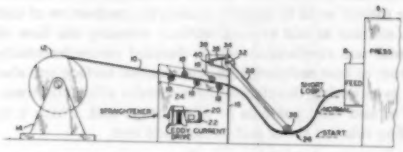
1. A padlock comprising a shell of hardened steel open at opposite ends and having in one wall the holes for the reception of the legs of the shackle, a core with corresponding bores for said legs and for a locking mechanism made of a soft alloy, the bores for said legs within the core being partially lined with hardened steel inserts facing the open ends of said shell, said inserts holding said core within said shell.

4,464,916

LOOP FOLLOWER STRAIGHTENER CONTROL IN A PRESS INSTALLATION

Gary T. Grew, New Knoxville, and Ronald F. Fortman, Minster, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed May 28, 1982, Ser. No. 382,954
Int. Cl.³ B21C *19/00*; B21B *37/04*
U.S. Cl. 72—17 **12 Claims**



1. In a press installation comprising a coil of strip stock, a press, press feed means for feeding strip stock into the press, and a motor driven straightener means positioned between the coil and feed means for feeding the stock to the press feed means and removing the curvature from the stock, the stock being slack between the straightener means and press feed so as to form a loop, apparatus for controlling the speed of the straightener means comprising:

a control arm mechanism engaging the loop of stock and adapted for moving in accordance with the size of the loop,

potentiometer means connected to said control arm mechanism for producing on an output an electrical feedback signal the magnitude of which varies proportionally with the movement of the control arm mechanism,

a variable speed motor drive means for driving said straightener means and having a control input, said motor drive means including means for varying the speed of the straightener means proportionally in response to a control signal on said control input,

a manually settable loop size control means for generating a reference signal having a variable magnitude and including a digital display means for displaying a multiple digit number corresponding to the magnitude of the reference signal,

feedback control means having a first input to which the feedback signal is connected, a second input to which the reference signal is connected, and an output connected to the motor drive means control input, said control means generating a control signal on its output which is proportional to the deviation of the feedback signal from the reference signal,

a long loop limit switch means connected to said straightener means and positioned to be actuated by said control arm mechanism to stop said straightener means when the loop reaches a predetermined size, and

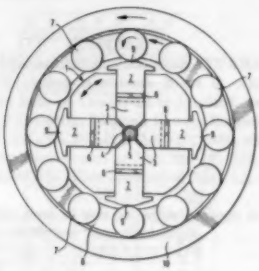
means for adjusting the spatial relationship between the control arm mechanism and limit switch whereby the point in the path of movement of the control arm mechanism whereat the limit switch is actuated can be varied,

said feedback control means including means for continuing to cause said drive means to drive said straightener means, even after the feed means is stopped, until said limit switch is actuated, to thereby cause said loop to obtain the desired size prior to restarting of the press.

4,464,917
SWAGING MACHINE

Klaus Kienhöfer, Niefern-Öschelbronn, Fed. Rep. of Germany, assignor to Gebr. Felss, Konigsbach-Stein, Fed. Rep. of Germany

Filed Feb. 10, 1983, Ser. No. 465,443
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205584
Int. Cl.³ B21J 7/16
U.S. Cl. 72—76 13 Claims



1. In a swaging machine which defines a path for a workpiece to be swaged and comprises
- a plurality of dies, which are spaced around and radially movable with respect to said path,
- a plurality of rams, which are spaced around said path radially outwardly of and radially aligned with respective ones of said dies and radially movable with respect to said path,
- die-actuating means operable to oscillate said dies radially with respect to said path with the aid of said rams,
- a plurality of depth-setting wedges, which are spaced around and extend along said path, each of said wedges having a small end portion and a large end portion and being movable along said path to insert said small end portion between one of said dies and the die-actuating ram which is [illegible]y aligned with said die and thus to control the extent to which said die is movable toward said path by said die-actuating means and to permit the use of the machine for recess swaging, and
- a depth-setting flange, which extends across and is movable along said path and to which all said wedges are detachably connected,
- the improvement residing in that
- said flange has a plurality of through openings, which are spaced around said path and accommodate said large end portions of respective ones of said wedges, and
- detent means are provided, by which said large end portions of said wedges are releasably held in said flange in said openings.

4,464,918
METHOD AND APPARATUS FOR AUTOMATIC FEED OF MANDREL TUBE BENDER

Ralph J. Meehan, Naperville, Ill., assignor to Teledyne Industries, Inc., Aurora, Ill.

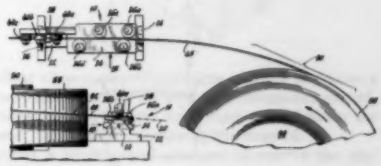
Filed Jul. 26, 1982, Ser. No. 401,750
Int. Cl.³ B21D 9/05
U.S. Cl. 72—133 10 Claims

1. In a mandrel type tube bender having a base, bending head, carriage for positioning a tube and its seam with respect to said bending head, and a mandrel rod supporting on its front end near said bending head a mandrel, the improvement comprising:
- first means for selectively fixing the rear of said mandrel rod with respect to said base;
- second means for selectively fixing an intermediate portion of said mandrel rod with respect to said base, wherein said one of said fixing means may be released when the other is engaged, thereby permitting loading of a tube over the rear of said mandrel rod and between said second means and said bending head;
- means for securing a tube and its seam with respect to said base, said securing means being movable along a path substantially parallel to said mandrel rod to move a tube secured thereby over said mandrel rod and between said first and seconds means; and
- means for advancing the tube with its seam in the same position with respect to the base as when the tube is engaged by the securing means, said means advancing the tube past the second means and substantially through the carriage whereby the carriage may grasp the tube at its rear end.

4,464,919
WIRE STRAIGHTENER AND METHOD FOR STRAIGHTENING WIRE

Robert A. Labbe, 2375 NE. Ocean Blvd., Apt. 401-D, Stuart, Fla. 33494

Filed Dec. 9, 1981, Ser. No. 328,945
Int. Cl.³ B21D 3/02; B21F 1/02
U.S. Cl. 72—162 21 Claims



1. A device for straightening wire from a helically wound coil comprising:
- means for positioning said coil wherein said wire being uncoiled has a coil set lying generally in a plane, the angle of said plane with respect to said helical coil varying along the length of the coil as the wire is uncoiled;
- first means for guiding said wire for longitudinal movement in a first plane, said guide means having at least three surfaces spaced longitudinally from each other and offset laterally from each other within said first plane for contacting and bending said wire upon longitudinal movement thereof, said coil positioning means located adjacent said first guide means;
- second means for guiding said wire for longitudinal movement in a second plane angularly offset from said first plane, said second guide means having at least three surfaces spaced longitudinally from each other and offset laterally from each other within said second plane for contacting and bending said wire upon longitudinal movement thereof; and
- means for supporting said first and second guide means, said support means located in a fixed position with respect to said coil, said angle of said coil set varying with respect to said support means during uncoiling of said wire, said first guide means being mounted to pivot freely with respect to said support, said varying angle of the coil set of said wire pivoting said first guide means to maintain a substantially constant angle between said plane of the coil set and said plane of said first guide means while the said angle be-

tween said plane of the coil set and said fixed support means varies.

19. A method for straightening wire from a coil comprising:

positioning a coil for rotation adjacent to a straightening device, said wire having a coil set lying substantially in a plane, the angle of said plane with respect to the device varying along the length of the coil as the wire is uncoiled;

passing the wire through a first means for guiding said wire for longitudinal movement in a first plane and for bending said wire at least three surfaces upon longitudinal movement of the wire;

passing said wire through a second means for guiding said wire for longitudinal movement in a second plane angularly offset from the first plane and bending said wire at least three surfaces in said second plane; and

pivoting the said first guide means about an axis to maintain a substantially constant angle between said plane of the coil set and said first plane of said guide means while the angle between said coil set and said straightening device varies during uncoiling of said wire.

4,464,920

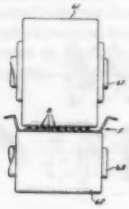
MACHINE FOR ROLLER FORMING METAL LOUVERS

Herbert M. Stoehr, New Berlin, and John J. Toben, Milwaukee, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed Oct. 27, 1982, Ser. No. 437,362

Int. Cl.[3] B21D *13/00, 28/26, 28/36*

U.S. Cl. 72—186 3 Claims



1. A roller forming machine for producing groups of long, narrow, laterally adjacent louver fins in a strip of metal, each fin having its length parallel to the length of the strip and being laterally inclined to the plane of the strip, substantially every fin being inclined in one oblique direction, said machine being characterized by:

A. a pair of cooperating forming rollers between which the strip passes lengthwise in an advancing direction and by which the strip is slitted to define the fins and the fins are bent out of the plane of the strip in said oblique direction to a first acute angle to said plane;

B. a pair of straightening rollers spaced in said advancing direction from said forming rollers and having opposing substantially cylindrical surface portions which engage the fins to bend them partially back towards coplanar relationship with the remainder of the strip and thus to a second and smaller acute angle to said plane, thereby producing a set of residual stresses in the strip that oppose the set of residual stresses produced by bending the fins to said first acute angle; and

C. means for adjustingly shifting one of said straightening rollers towards and from the other one, for increase and decrease, respectively, of the magnitude of the residual stresses produced by the straightening rollers, so that the sets of residual stresses in the strip can be brought to a substantial equilibrium wherein each said set of residual stresses prevents the other from imposing a twist upon the strip.

4,464,921

ARRANGEMENT FOR CONTROLLING A CONTROLLED DEFLECTION ROLL

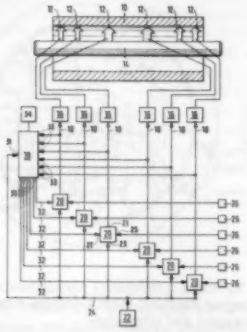
Miroslav Surat, Wilhelmsdorf-Zussdorf, Fed. Rep. of Germany, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Apr. 22, 1982, Ser. No. 370,741

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117516

Int. Cl.[3] B21B *37/08;* B30B *15/14*

U.S. Cl. 72—243 9 Claims



1. An arrangement for controlling the pressing force between a controlled deflection roll and a counter element, wherein:

the controlled deflection roll comprises a roll shell and a roll support;

a plurality of force-applying sources supported at the roll support and distributively arranged in the axial direction of the roll shell for pressing the roll shell against the counter element;

said force-applying sources being divided into a predetermined number of groups of such force-applying sources, each of which groups can be separately controlled;

a common adjustment element for a desired pressing force and for generating a common control signal;

a predetermined number of converters;

each said converter having a first input, a second input, a third input and an output;

said first input of each said converter being connected to said common adjustment element to receive therefrom said common control signal and said output of each said converter being operatively connected to control a related one of said groups of force-applying sources by supplying thereto a related group control signal;

said group control signals adjusting the pressing forces applied by said groups of force-applying sources such that there can be maintained at a minimum deviations of the individual pressing forces from a mean value of the pressing force along the controlled deflection roll and which mean value corresponds to said desired pressing force adjusted at said common adjustment element;

means connected to said second inputs of said converters for producing external correction signals for influencing at least one related group control signal by means of a related one of said converters;

a compensating arrangement having a first input, a predetermined number of second inputs and a predetermined number of outputs;

said first input of said compensating arrangement being connected to said common adjustment element to receive therefrom said common control signal;

each said second input of said compensating arrangement being operatively connected to said output of a related

one of said converters to receive therefrom a related group control signal;

each said output of said compensating arrangement being connected to said third input of a related converter to deliver thereto an auxiliary correction signal; and

said compensation arrangement, when at least one correction signal is supplied to at least one of said converters by said external correction signal-producing means, counteracting by means of at least one delivered auxiliary correction signal a variation in at least one group control signal generated by at least one further converter other than said at least one converter.

4,464,922

WIRE DRAWING METHOD AND APPARATUS

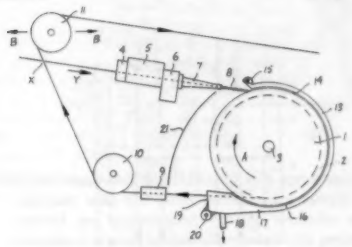
John W. Pamplin, Bishop Auckland; Brian R. Astbury; and Richard Shillito, both of Crook, all of England, assignors to Marshall Richards Barcro Limited, Crook, England

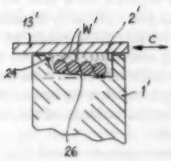
Continuation of Ser. No. 145,126, Apr. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 101,561, Dec. 10, 1979, Pat. No. 4,345,451. This application May 13, 1982, Ser. No. 377,622

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ B21C *9/00, 3/14*

U.S. Cl. 72—286 **5 Claims**





1. In a method of drawing ferrous wire employing a plurality of drawing stages for continuously drawing the ferrous wire to successively smaller sizes, with each stage comprising a wire drawing die for reducing the size of the wire, a soap box upstream of the die having a dry wire lubricant for lubricating the ferrous wire for drawing the wire to a smaller size and a rotatable draw block downstream of the die having an outer coaxial generally cylindrical surface for receiving a plurality of turns of wire for drawing the wire with the draw block through the die, the improvement wherein said method comprises, at each of a plurality of successive drawing stages, drawing the ferrous wire through the respective die with a plurality of turns of wire on the respective draw block, providing a draw block cowl extending at least partly around the draw block to form with the draw block a liquid coolant reservoir extending at least partly around the cylindrical surface of the draw block for holding liquid coolant in contact with the draw block and each of the plurality of turns of wire thereon, and continuously cooling the wire by continuously conducting a water based liquid coolant into contact with the ferrous wire along the wire path from the die to the draw block and into the liquid coolant reservoir into contact with the draw block and each of said plurality of turns of wire on the draw block, and drying the wire between each upstream draw block and downstream soap box of said plurality of successive drawing stages.

4,464,923

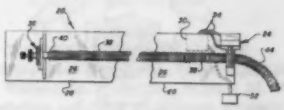
METHOD AND APPARATUS FOR BENDING CORRUGATED PIPE

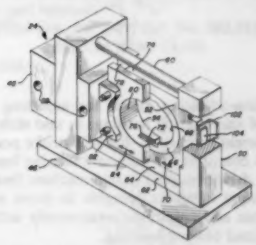
Samuel D. Boggs, 400 E. Randolph St., Chicago, Ill. 60601, and Clement J. Miller, 525 S. East St., Crown Point, Ind. 46307

Filed Jan. 28, 1982, Ser. No. 343,436

Int. Cl.³ B21D *7/00, 7/14*

U.S. Cl. 72—307 **62 Claims**





1. A method of incrementally bending a length of pipe to a desired bend angle, in which the pipe has corrugations providing alternating, annular valleys and ridges spaced along the length thereof, the method comprising the steps of:

A. providing a bending tool arranged to receive the pipe therein having a pair of cooperating dies located on opposite sides of the pipe for grasping the pipe solely on the outside of the pipe, one of said dies having an arcuate seat arranged to engage a pair of adjacent ridges at the heel of the bend angle and the second die having an arcuate seat arranged to engage the valley intermediate said pair of ridges at the throat of the bend angle;

B. moving said dies one relative to the other so as to functionally engage only said pair of ridges and said intermediate valley concurrently and move them relative one another a distance sufficient to reform the normal configuration of said valley and change the linear distance between portions of said pair of ridges to effect a segmental arc bend thereat,

C. repeating said step B over a number of consecutive valleys and ridges directly related to the desired bend angle.

37. The method of claims **1**, **2** or **21** in which moving said dies includes moving said dies the same distance into the pipe section for each segmental arc bend to obtain equal angular segmental arc bends and a desired bend angle of one radius.

4,464,924

SWAGING MACHINE

Bruno Kralowetz, St. Ulrich 142, A-4400 Steyr, Austria

Filed Nov. 9, 1982, Ser. No. 440,339

Claims priority, application Austria, Nov. 17, 1981, 4951/81

Int. Cl.³ B21J *9/18*

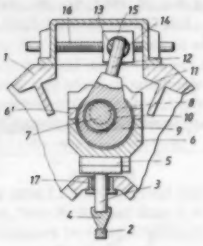
U.S. Cl. 72—452 **6 Claims**

1. In a swaging machine comprising

a plurality of angularly spaced apart, longitudinally recipro-

cable swaging rams, each of which is provided with a slide track,

a plurality of ram-operating mechanisms for longitudinally reciprocating respective ones of said rams, each of said ram-operating mechanisms comprising a slide block arranged to be guided by said slide track of the associated ram as in a Scotch yoke, a bearing bushing rotatably mounted in said slide block and having an eccentric bearing, and an eccentric mounted in said bearing for rotation on an axis of rotation which is transverse to the longitudinal direction of the associated ram, said slide track extending transversely to said axis of rotation and extending transversely to the longitudinal direction of the associated ram,



stroke position-adjusting means for adjusting the angular position of said bearing bushings in said slide blocks,

the improvement residing in that said stroke position-adjusting means comprise for each said bearing bushings:

an adjusting drive mounted in said machine frame and comprising output means is operable to move said laterally spaced from and adjustable transversely with respect to the associated bearing bushing,

a guiding member rotatably mounted in said output means bearing, and

an adjusting arm rigid with said bearing bushing and extending into and longitudinally slidable in said guiding member to adjust the angular position of the associated bearing bushing in response to a transverse movement of said output means with respect to said bearing bushing.

4,464,925

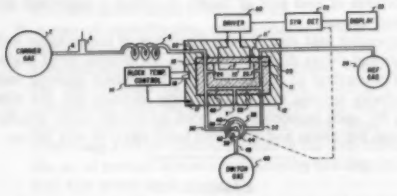
HYDROGEN, DEUTERIUM THERMAL CONDUCTIVITY DETECTOR

Richard H. Kolloff, West Chester, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 17, 1982, Ser. No. 378,662

Int. Cl.³ G01N *31/08*

U.S. Cl. 73—23.1 **12 Claims**



1. Apparatus for detecting relative amounts of hydrogen in a mixture of gases, comprising

a thermal conductivity detector having a block defining the walls of a cavity, a filament mounted in said cavity, said block also defining an input port near one end of said filament and an outlet port near the other end of said filament, whereby gas injected into said input port passes between the filament and the walls of said cavity and out the outlet port,

output signal means coupled to said filament for producing an electrical signal indicative of the thermal conductivity of the gas in said cavity,

a gas chromatographic column having one end coupled to said input port and an injector mounted so as to introduce a sample mixture of gases into a stream of helium that can flow into said input port, when a source of helium is coupled thereto,

means for establishing said filament at a temperature in excess of 400° C. and means for establishing the temperature of said block at a lower temperature such that said output signal means produces a signal of one polarity for all concentrations of hydrogen.

4,464,926

METHOD AND APPARATUS FOR SENSING THE PRESENCE OF OXYGEN IN A GAS MIXTURE

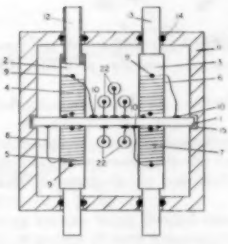
Scato Albarda, Gross Schenkenberg, and Alfred Eder, Munich, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,716

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145542

Int. Cl.³ G01N *27/00*

U.S. Cl. 73—27 A **8 Claims**



1. A sensor for sensing the presence of oxygen in a test gas mixture, comprising a separate flow tube for the passage of a test gas and a measured gas, a plurality of radio-frequency coils associated with each of said flow tubes, an electrical bridge circuit interconnecting said radio-frequency coils, the oxygen in the gas flowing through said flow tube means producing a paramagnetism causing induction variations in said coils of said circuit in proportion to the content of the oxygen which are indicated in said circuit.

4,464,927

APPARATUS FOR MEASURING GAS TRANSMISSION THROUGH FILMS

Philip L. Reid, Rte. 2, Box 422, Duncan, S.C. 29334

Filed Jan. 7, 1982, Ser. No. 337,696

Int. Cl.³ G01N *15/08*

U.S. Cl. 73—38 **4 Claims**

1. An apparatus for measuring gas transmission through membrane samples located at sample sites, comprising;

a lower staging section,

said lower staging section defining a plurality of sample sites;

each sample site having perimeter defining means for hermetically sealing said sample within said sample site;

said perimeter defining means together with one surface of a sample defining a first gas containment volume;

said lower staging section defining conduit means in communication with each said first gas containment volume for providing a flow of gas into and out of said first gas containment volume;

means communicating with said conduit means for interrupt-

ing said flow of gas into and out of each said first containment volume so as to provide stagnation of gas within each said first gas containment volume when said means for interrupting is actuated;

each said means for interrupting communicating with a source of gas for introduction into each of said first gas containment volume and having an exit port which receives gas from said first gas containment volume when not interrupted;

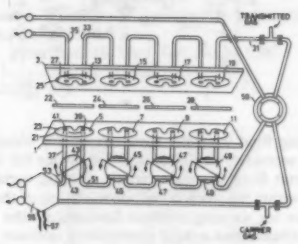
detection means in communication with said exit port;

automated means for opening and closing each of said means for interrupting on a periodic basis;

said lower staging section defining upwardly projecting alignment pins;

a removable upper staging section defining a plurality of sample sites for alignment with the sample sites of said lower staging section;

said upper staging section having a plurality of perimeter defining means at each sample site for hermetically sealing a sample at said sample site;



said perimeter defining means of said upper staging section together with the other surface of a sample defining a second gas containment volume whereby a sample is contained at each sample site between the perimeter defining means of said lower staging section and the perimeter defining means of said upper staging section;

said upper staging section defining conduit means communicating with said second gas containment volume for providing a flow of gas therethrough;

said upper removable staging section defining alignment pin receipt means for positioning said upper removable staging section upon said lower staging section; and

wherein said alignment pins define means for communicating with said conduit means of said upper removable staging section whereby a gas flow path is established through said alignment pins of said lower staging section in to the conduit means of said upper staging section and from said conduit means into another alignment pin of said lower staging section.

4,464,928

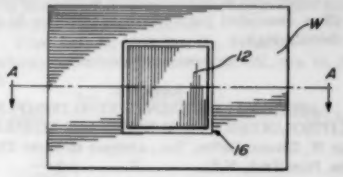
METHOD OF MEASURING SHEAR STRESS

John M. Dealy, 305 Grosvenor Ave., Montreal, Canada (H3Z 2M1)

Filed Sep. 20, 1982, Ser. No. 419,793
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—54 **9 Claims**

1. A method of measuring the shear stress in a viscous or viscoelastic liquid comprising in steps of:

flowing said liquid past a plate member in a direction substantially parallel to a generally planar face thereof and measuring the force exerted on said plate in a direction substantially parallel to said face, said plate member being



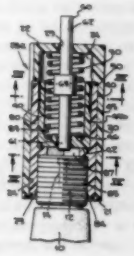
mounted such that the primary dynamic force acting thereon is said force parallel to said face.

4,464,929

TIRE CAP PRESSURE GAUGE

William M. Willis, 19440 Citronia St., Northridge, Calif. 91324, assignor to William M. Willis, Sr.; William M. Willis, Jr., both of Northridge and Jerry W. Schwarz, Granada Hills, all of, Calif., a part interest

Filed Sep. 21, 1981, Ser. No. 303,912
Int. Cl.³ B60C *23/02*
U.S. Cl. 73—146.8 **4 Claims**



1. A tire valve stem mounted tire pressure indicator gauge for giving a visually perceivable indication of the associated tire air pressure, said gauge comprising:

a hollow housing having opaque side walls;

window aperture means in said housing side walls for providing visual access to the interior of said housing;

a hollow insert member of transparent low friction material inserted into said housing through an open end thereof and having a piston receiving chamber adjacent said window aperture means;

a piston moveably mounted in close sliding fit relation within said piston receiving chamber said piston being moveable into positions within said chamber wherein it is visually perceivable from outside said housing through said window aperture means;

means for mounting said housing via said insert member to a tire valve stem;

means for communicating tire air from said stem through said insert member into said chamber in which said piston is moveably mounted with said air directly contacting said piston, air flow past said piston being impeded but not prevented by said close sliding fit relation between said piston and insert member;

means for normally venting said chamber on the side of said piston facing into said housing to atmosphere in an audible manner when air flows past said piston; and

plunger means having a first end protruding from said housing for manual engagement, a central portion within said housing and passing through said piston and insert mem-

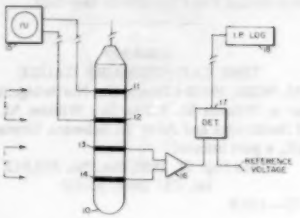
ber and a lower end for engaging the valve post of said tire valve stem when said first end is manually depressed, and wherein said housing, piston and insert member are each provided with plunger receiving bores of sufficient size to allow associated portions of said plunger to past freely therethrough.

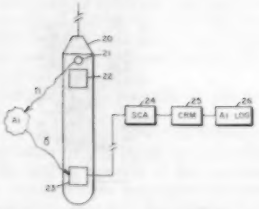
4,464,930

METHOD FOR IDENTIFYING COMPLEX LITHOLOGIES IN A SUBSURFACE FORMATION

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,409
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—152 **8 Claims**





1. A method for identifying complex lithologies in a subsurface formation surrounding a borehole, comprising the steps of:

(a) recording an induced polarization log of said formation,

(b) recording a nuclear log of delayed gamma rays from the activation of aluminum in said formation,

(c) recording a nuclear log of inelastic scattering gamma rays from the activation of iron in said formation, and

(d) combining said induced polarization log and said nuclear logs to identify the composition of the lithology of said formation.

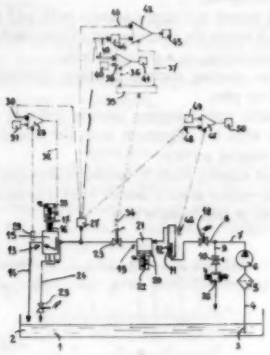
4,464,931

METHOD AND APPARATUS FOR CHECKING THE OPERATING CONDITIONS OF A FLOW AND PRESSURE CONTROL MEMBER

Jean Hendrick, Friville-Escarbotin, France, assignor to 501 Robinette S.F.R., S.A., Fressenneville, France

Filed Apr. 7, 1982, Ser. No. 366,426
Claims priority, application France, Apr. 15, 1981, 81 07953
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 **16 Claims**

1. Apparatus for checking the operation of a fluid control member that is actuated at a predetermined pressure, the apparatus comprising a main fluid circuit having an inlet and an outlet and including therein flow measuring means for measuring the fluid flow therethrough and pressure measuring means for measuring the pressure therein, the control member being disposed at said outlet; pressurized fluid source means for providing pressurized fluid to said inlet; a fluid bypass circuit connected to said inlet for bypassing fluid supplied to the inlet, the bypass circuit including flow regulating means for regulating the fluid flow through the bypass circuit; a first controllable isolation device disposed in the main circuit adjacent to said inlet for isolating the main circuit from the fluid source means and from the bypass circuit; a bleed circuit connected at the outlet of the main circuit upstream from said control member



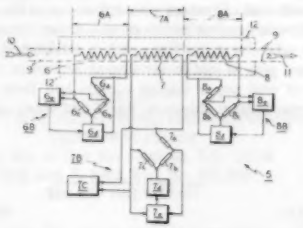
for bleeding fluid from the main circuit, the bleed circuit including a second controllable isolation device for isolating the bleed circuit from the main circuit; volume variation means disposed within the main circuit downstream of the first isolation device for varying, without fluctuations, the pressure in the main circuit; and a third controllable isolation device disposed between the volume variation means and the control member for isolating the volume variation means from the control member.

4,464,932

THERMAL MASS FLOWMETERING

James H. Ewing, Brockton, and Fred G. Ramberg, Salem, both of Mass., assignors to MKS Instruments, Inc., Burlington, Mass.

Filed Jul. 12, 1982, Ser. No. 397,109
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **13 Claims**



1. Flowmeter apparatus comprising conditioning means for regulating the temperature of a flowing fluid by exchanging heat therewith in response to a supply of energy, thermal means disposed in heat-exchange relationship with the fluid regulated in temperature by said conditioning means for both exchanging heat with the fluid and for electrically characterizing temperature changes caused by flow of the fluid, control means responsive to temperature changes as characterized by said thermal means and supplying energy to said thermal means which changes the temperature of the fluid from the level of its regulated temperature to different values, thermal

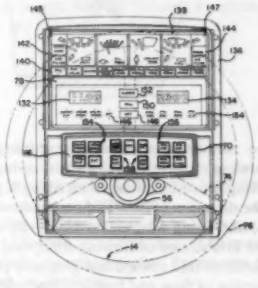
output conditioning means for regulating the temperature of the fluid immediately downstream of said thermal means to temperature between said level and the average of said different values, and flow measurement means characterizing energy supplied to at least one of said conditioning means and said thermal means, said control means supplying energy to said thermal means which maintains the said average of said different values of temperature substantially constant.

4,464,933

STEERING CONSOLE PROVIDING DIGITAL READOUT DISPLAYS

Dean C. Santis, Winfield, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Nov. 15, 1982, Ser. No. 441,883
Int. Cl.³ G01D *3/10, 7/04*
U.S. Cl. 73—432 AD **21 Claims**



1. For use in an engine-powered wheel tractor vehicle equipped with a first engine-connected vehicle member and a second wheel-connected vehicle member, the improvement comprising:

a vehicle operator's steering station having instrument clusters remotely located thereat and disposed essentially in a common instrument panel plane and including digital display means operative to give rate readouts; an instrument keyboard so operatively related to the instrument clusters as to be disposed in a keyboard plane closer to the operator and slightly below the instrument clusters as viewed by the operator; and pivoted steering column structure common to the clusters and keyboard and supporting same so that as located on the steering column structure they occupy spaced-apart parallel instrument panel and keyboard planes in the operative relationship described;

transducers associated with the first and second vehicle members for generating pulse signals at frequencies proportional to the tachometer rate at which the engine is making revolutions and the rate at which the wheels are turning, and

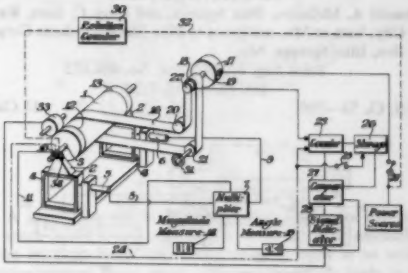
operating means including the keyboard and connected to the transducers and the display means to selectively compute and separately operate the latter so as to display accurate engine tachometer digital readouts and ground speed digital readouts.

4,464,934

PROCEDURE FOR TRANSFERRING MEASURED ANGLE OF UNBALANCE POSITION TO A ROTOR AND MECHANISM FOR IMPLEMENTING SAME

Alfred Giers, Rossdorf, Fed. Rep. of Germany, assignor to Carl Schenck AG., Fed. Rep. of Germany

Filed Aug. 31, 1982, Ser. No. 413,410
Claims priority, application European Pat. Off., Sep. 10, 1981, 81107132.3
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **12 Claims**



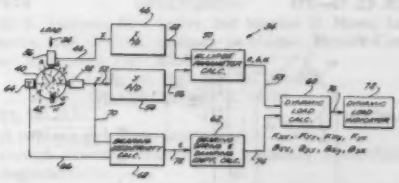
1. A procedure for transferring a measured angle of unbalance to a correction plane of a rotor to be investigated, whereby no rotating part of the balancing machine runs synchronously with the rotor to be investigated, characterized thereby that an impulse generator located on a rotating part of the balancing machine and coupled with the rotor being investigated generates a sequence of impulses related to the rotation of said part, interrupting by a stop-start impulse derived from the rotor the counting of the impulse sequence for each revolution of the rotor being investigated, storing the number of impulses generated for each revolution of the rotor, correlating a measured angle of unbalance position of the rotor being investigated to the counted and stored impulses of the impulse sequence corresponding to the periphery at a correction plane of the rotor being investigated, and storing such impulse count for further processing.

4,464,935

SHAFT VIBRATION EVALUATION

James D. McHugh, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1983, Ser. No. 492,740
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—660 **10 Claims**



1. A shaft vibration evaluator for evaluating dynamic loading imposed on a bearing in a fluid film journal bearing, comprising:

means for sensing lateral displacement of said shaft with respect to said bearing along first and second angularly spaced apart axes to produce first and second displacement signals;

means responsive to said first and second displacement sig-

nals for calculating ellipse parameters of an elliptical orbit of an axis of said journal;

means for calculating a set of spring and damping coefficients of said fluid film journal bearings; and

means responsive to said ellipse parameters and said spring and damping coefficients for calculating a value related to a dynamic load on said bearing.

4,464,936

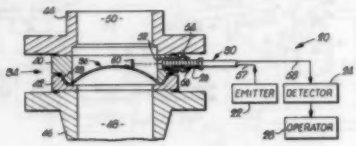
MONITORING APPARATUS FOR PRESSURE SENSITIVE DEVICES

Ronald A. McIntire, Blue Springs, and Gary C. Batz, Kansas City, both of Mo., assignors to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Aug. 3, 1982, Ser. No. 404,852

Int. Cl.³ G01L 7/08

U.S. Cl. 73—705 **13 Claims**



1. In combination with a pressure sensitive device having a pressure actuatable shiftable member which undergoes rupture when shifted from a normal position to an actuated position, monotoring apparatus for sensing the operational status of said device comprising:

means for transmitting a light beam, said transmitting means being oriented relative to said shiftable member such that said light beam is selectively shiftable between a plurality of paths of travel in response to shifting of said shiftable member from the normal position thereof toward an actuated position of the same,

said transmitting means including a reflective element for directing said light beam along said one path of travel;

means for detecting said light beam when said light beam is aligned along a predetermined one of said paths of travel; and

means responsive to said detecting means for indicating when said light beam is aligned along said one path.

4,464,937

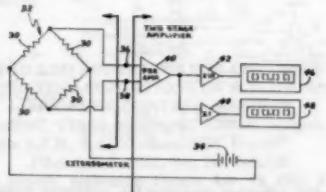
EXTENSOMETER READOUT CIRCUIT

David E. Watts, Eden Prairie, and Robert W. Winters, Burnsville, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Sep. 22, 1982, Ser. No. 421,147

Int. Cl.³ G01B 7/16

U.S. Cl. 73—772 **12 Claims**



9. A signal conditioning system for conditioning a strain information signal so that signal accuracy required for modulus calculations and signal range required for ultimate elongation measurements are both obtained, the system comprising:

high gain amplifier means connected to receive the strain information signal for providing an amplified strain information signal having high resolution when the specimen is under low strains so that accuracy necessary to perform modulus calculations and yield measurements is obtained; and

low gain amplifier means connected to receive the strain information signal for providing an amplified strain information signal having low resolution when the specimen is under high strains so that a strain information signal having a range required for ultimate elongation measurements is obtained.

4,464,938

Patent Not Issued For This Number

4,464,939

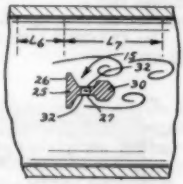
VORTEX FLOWMETER BLUFF BODY

Gary P. Corpron, Chanhassen, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Mar. 12, 1982, Ser. No. 357,465

Int. Cl.³ G01F 1/32

U.S. Cl. 73—861.24 **16 Claims**



1. A flow measuring apparatus comprising a bluff body vortex generating element forming a bar having a longitudinal axis and having a cross section taken along a plane generally parallel to the direction of flow and perpendicular to the longitudinal axis, and being adapted to be rigidly mounted on at least one end in a stream of flowing fluid; said bar having:

a face situated to face toward and generally perpendicular to the direction of flow and having a first width in said plane perpendicular to the flow direction;

an intermediate section downstream of said face and of substantially reduced width measured in the same direction as the width of the face;

a tail section immediately downstream of said intermediate section and having a width measured in the same direction as the width of the face greater than the width of said intermediate section and less than the first width and extending outwardly from both edges of said intermediate section a desired amount;

the intermediate section being substantially imperforate and substantially co-extensive with the face and tail section in direction along the longitudinal axis; and

means mounted in said intermediate section to sense the frequency of formation of vortices which flow past the intermediate section.

4,464,940

SAMPLER FOR A GAS CHROMATOGRAPH

Peter Pospisil, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,305

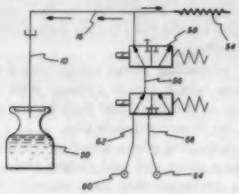
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129833

Int. Cl.³ G01N 1/14

U.S. Cl. 73—864.21 **2 Claims**

1. A head space sampler for a gas chromatograph, said sampler comprising:

a needle connected to the entrance of a gas chromatographic separating column by means of a connecting passage;
a carrier gas conduit terminating at said connecting passage between said needle and said separating column;
means for generating a first higher carrier gas pressure at a first carrier gas connection;
means for generating a second carrier gas pressure, which pressure is comparatively lower that said said first pressure, at a second carrier gas connection;



a change-over valve, said change-over valve having said first and second carrier gas connection as inputs and said carrier gas conduit as an output;
a controllable shut-off valve disposed in said carrier gas conduit between said change-over valve and said termination of said carrier gas conduit at said connecting passage; and
means for piercing said needle through a septum of a sample vessel into the head space thereof.

4,464,941

DEVICE FOR THE CONTACTLESS METERING OF LIQUIDS

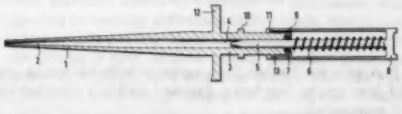
Wolf-Dietrich Herold, Hechendorf; Oswald Gasser, and Günter Pieper, both of Seefeld, all of Fed. Rep. of Germany, assignors to ESPE Fabrik pharmazeutischer Praeparate GmbH, Seefeld, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,262

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212378

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—864.13 **9 Claims**



1. A device for the contactless metering of liquids, comprising
an elongate body having a longitudinal passage therethrough, an upper portion of the body forming a hollow barrel the interior of which forms an extension of said passage,
a sleeve having an open lower end engaging the outer surface of said barrel,
a piston centrally disposed within said sleeve and mounted for reciprocation inside said barrel,
a spring surrounding said piston and bearing against an upper end of said barrel to bias said piston towards one limit position, and
means providing a sealing between said upper barrel end and said piston.

4,464,942

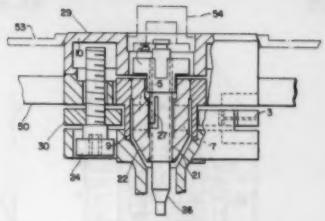
GYROSCOPE HINGE ASSEMBLY WITH ADJUSTABLE AXIAL COMPLIANCE

Walter J. Krupick, Succasunna, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jul. 20, 1981, Ser. No. 284,892

Int. Cl.³ G01C *19/22*

U.S. Cl. 74—5 F **3 Claims**



1. A gyroscope which includes a rotor, a shaft for driving said rotor about a spin axis, and a universal joint assembly having an inner hinge unit for supporting loads in an axial direction and an outer hinge unit for supporting loads in a radial direction, the outer hinge unit comprising:
an outer upper gimbal connecting to the rotor,
an outer middle gimbal, and
an outer lower gimbal connecting to the shaft and having a sleeve portion,
said outer middle gimbal having a first pair of outer flexures connecting to the outer upper gimbal, and
a second pair of outer flexures connecting to the outer lower gimbal and being in quadrature with said first pair of outer flexures; and the inner hinge unit comprising:
an inner upper gimbal, and
an inner middle gimbal,
said inner middle gimbal having a first pair of inner flexures connecting to the inner upper gimbal, and
a second pair of inner flexures connecting to the outer lower gimbal through said sleeve portion of the outer lower gimbal and being in quadrature with said first pair of inner flexures, said inner upper gimbal being fixedly connected to said outer upper gimbal, whereby said first pair of inner flexures are loaded in compression; and
said second pair of inner flexures are loaded in tension;
thereby minimizing the restraint changes due to spin axis accelerations.

4,464,943

SEEKER GYROSCOPE HAVING REDUCED CROSS-COUPLING BETWEEN ROTOR SPIN AND PRECESSION

Harold E. Andrews, Simi Valley, and Spencer D. Howe, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 14, 1982, Ser. No. 388,061

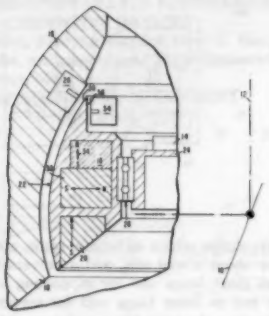
Int. Cl.³ G01C *19/30, 19/06*

U.S. Cl. 74—5.46 **10 Claims**

1. A two-axis gyroscope comprising:
a current directing assembly for producing controllable magnetic fields;
a source means for providing plural currents to said current directing assembly;
a single rotor assembly of unitary structure rotatable about a spin axis, said rotor assembly comprising:
first means for providing a first magnetic field characterized by a magnetic vector oriented parallel to said spin axis such that said field remains constant with respect to said current directing assembly as said rotor assembly rotates;
second means, fixed for rotation with said first means, for providing a plurality of second magnetic fields, each char-

acterized by a magnetic vector orthogonal to said spin axis such that the magnetic field produced by said second means varies with respect to said current directing assembly as said rotor assembly rotates;

third means, fixed for rotation with said first means, for providing a third magnetic field characterized by a magnetic vector parallel to said spin axis such that said field remains constant with respect to said current directing assembly as said rotor assembly rotates; and



said second means is located axially between said first and third means, with its central axis coincident with said spin axis;

said rotor assembly being mounted proximate said current directing assembly, whereby interaction of some of said controllable magnetic fields with said second magnetic fields causes said rotor assembly to rotate about the spin axis and the interaction of others of said controllable magnetic fields with said first magnetic field and said third magnetic field causes said rotor assembly to precess.

4,464,944

PUSH-BUTTON TYPE TUNING APPARATUS

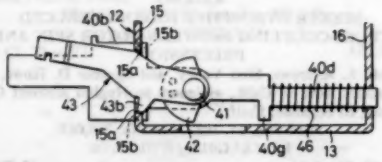
Teruo Shimazu; Toshio Edamoto, both of Atsugi, and Azuma Miyazawa, Takaidonishi, all of Japan, assignors to Mitsumi Electric Co. Ltd., Japan

Filed Oct. 21, 1981, Ser. No. 313,278

Claims priority, application Japan, Oct. 24, 1980, 55-152744[U]; Dec. 23, 1980, 55-185181[U]; Jan. 22, 1981, 56-8323[U]; Apr. 13, 1981, 56-52794[U]

Int. Cl.³ F16N *35/18;* **H03J** *5/06*

U.S. Cl. 74—10.33 **13 Claims**



1. A push-button type tuning apparatus comprising:

a frame comprising a front side plate part having a plurality of first support holes, a rear side plate part having a plurality of second support holes, right and left side plate parts, and bottom plate part, said frame being formed from a single plate member by unitarily bending the front and rear side plate parts and the right and left side plate parts at four sides of the bottom plate part, each of said first support holes having a pair of cutout holes formed above and below the first support hole at mutually opposing positions so as to communicate to said first support hole;

a plurality of push-button assemblies each having a sliding plate, a memory piece which is rotatably provided on said sliding plate, a restricting plate for restricting said memory piece, said restricting plate being rotatably provided on said sliding plate, and a push-button which is fixed to a front end of said sliding plate, each of said push-button assemblies being supported freely slidable in frontward and backward directions in a state where the push-button assembly is inserted through corresponding support holes in said front and rear side plate parts and urged frontward by spring means; and

a control mechanism supported between said right and left side plate parts in a state free to link with the memory piece in each of said push-button assemblies, for operating a tuning mechanism,

each of said restricting plates comprising a stoping projection portion which makes contact with said front side plate part to stop each of said push-button assemblies from sliding in the frontward direction,

each of said restricting plates which are only assembled with said memory piece and said sliding plate, being inserted through a corresponding first support hole in a state where the restricting plate is rotationally displaced so that said stopping projection portion corresponds within a height dimension of the first support hole before the sliding plate is fitted into said pair of cutout holes of said first support hole,

each of said push-buttons being fixed to the front end of a corresponding sliding plate in a state where said restricting plates are rotationally restored to regular positions so that said stopping projection portions assume corresponding positions where said stopping projection portions can make contact with said front side plate part.

4,464,945

GEAR MECHANISM FOR MOTOR VEHICLES

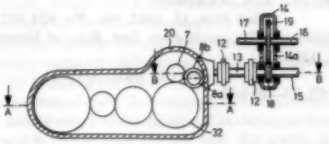
Herbert Ertl, Starnberg, Fed. Rep. of Germany, assignor to Interparte Aktiengesellschaft, Vaduz, Liechtenstein

Filed Feb. 18, 1981, Ser. No. 235,630

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006811

Int. Cl.³ F16H *37/00*

U.S. Cl. 74—15.6 **1 Claim**



1. A gear mechanism for a motor vehicle having an engine, said gear mechanism being disposed within a common casing and comprising:

a back gear stage comprising a driving shaft, a first gear mounted on said driving shaft and a second gear operatively associated with said first gear;

a primary transmission shaft having said second gear mounted thereon;

a secondary transmission shaft mounted mutually parallel with respect to said primary transmission shaft;

change speed gearing for changing travel speed of said motor vehicle and comprising a plurality of gears mounted on said primary and secondary transmission shafts;

a two-stage transmission gear assembly comprising a layshaft having a driving pinion gear mounted thereon, and first and second gears mounted on said secondary transmission shaft for driving said layshaft such that said two stage transmission gear assembly matches said travel

speed of said motor vehicle with varying driving conditions;

a differential gear assembly including said driving pinion gear mounted on said layshaft;

first and second driving shafts driven by said driving pinion gear for driving said motor vehicle;

a power take off assembly engageable with said driving shaft of said back gear stage for separately driving a plurality of working devices and having a power take off shaft extending to the exterior of said common casing;

a coupling device for engaging said driving shaft of said back gear stage with said power take off assembly;

a reversing gear mechanism having a first gear and a second gear each mounted on a reversing gear shaft, said reversing gear shaft journaled within said common casing and parallel with said primary transmission shaft; and

said first gear of said back gear stage movably mounted on said driving shaft of said back gear stage from a first position to a second position for meshing engagement with said first gear mounted on said reversing gear shaft, and wherein said second gear mounted on said reversing gear shaft engages said second gear of said back gear stage so as to provide opposite directions of rotation to said gear mechanism.

4,464,946

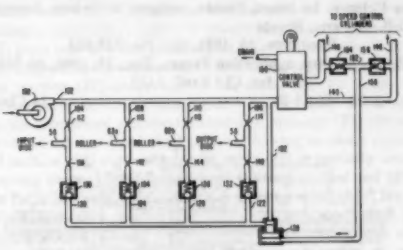
CONTROL ARRANGEMENT FOR THE SUPPLY OF LUBRICANT TO THE BEARINGS OF AN INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Jan. 26, 1983, Ser. No. 461,108

Int. Cl.³ F16H *15/08, 57/04;* **F01M** *1/00;* **F16N** *17/06*

U.S. Cl. 74—200 **9 Claims**



6. An arrangement for supplying lubricant from a single pressurized lubricant source to a number of hydrostatic bearings subjected to variably different relative loads, that is, high loads at low speeds and low loads at high speeds, said arrangement comprising a first conduit having branches providing communication between said lubricant source and said bearings, said branches including orifices for limiting the lubricant flow supplied to each bearing to a predetermined value, a second lubricant supply line with low pressure branches to the various hydrostatic bearings for supplying low pressure lubricant to said bearings, said second lubricant supply line being connected so as to receive lubricant from said lubricant source and including a pressure reducing valve for supplying low pressure lubricant to said low pressure branches; and a check valve arranged in each low pressure branch so as to prevent backflow of high pressure fluid through a low pressure branch when the associated bearing is under high load, said pressure reducing valve being selected so as to provide a lubricant of a pressure lower than the highest design pressure of said bearings but higher than the pressure in the lowest load bearings, thereby to cause additional lubricant from said low pressure branches to be supplied to the low load bearings for an increase in the lubricant film thickness in said low load (high speed) bearings.

4,464,947

DRIVE TRANSMISSIONS

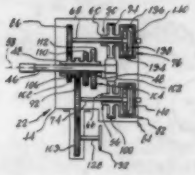
Claude P. Windsor-Smith, 33 Main St., Ashley, Nr. Market Harborough, Leicestershire, and Raymond A. Tailby, 40 Moat Rd., Loughborough, Leicestershire, both of England

Filed May 11, 1981, Ser. No. 262,360

Claims priority, application United Kingdom, May 30, 1980, 8017755

Int. Cl.³ F16H *3/08*

U.S. Cl. 74—329 **17 Claims**



1. In a highway vehicle as defined herein comprising ground wheels, a prime mover, and a drive train connecting the prime mover to the ground wheels, a gearbox forming part of said drive train and comprising:

an input shaft;

an output shaft;

an input shaft gear on the input shaft;

an output shaft gear on the output shaft;

at least two layshafts having corresponding constant mesh layshaft gears;

clutch means for each of said layshafts for selective transmission of drive through the layshafts; and

a gearbox housing;

said layshaft gears comprising layshaft change speed input gears and layshaft output gears with one layshaft input gear and one layshaft output gear for each layshaft;

the layshaft input gear of each of said layshafts meshing directly with said input shaft gear and the layshaft output gear of each of said layshafts meshing directly with said output shaft gear;

one layshaft and its corresponding clutch means and layshaft gears being provided for each layshaft-transmitted transmission ratio of the gearbox, and said clutch means being located within said housing at one end thereof and at the ends of the layshafts, the clutch means each comprising an assembly of interleaved clutch plates whereby automatic or semi-automatic power shifting between the ratios provided by said gearbox can be provided;

liquid coolant supply means to supply liquid coolant to said clutch means and coolant control means being provided to control the supply of liquid coolant to said clutch means whereby in use the flow of coolant to at least one of said clutch means may be greater than the flow to another thereof according to the usage of the clutch means, said one of said clutch means being associated with a layshaft providing a lower transmission ratio for lower output shaft speed than said other of said clutch means; and

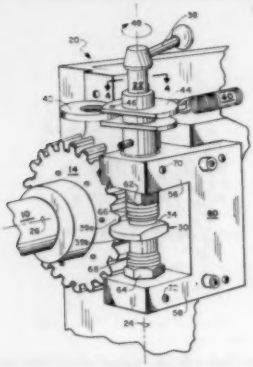
clutch control means operable to cause at least one of said clutch means to be partially engaged in addition to the clutch means engaged for driving purposes at a given time, to provide a vehicle retarder.

4,464,948

LOCKING MECHANISM FOR INDEXING DEVICE

Carl W. Lindemeyer, Aurora, Ill., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 342,443
Int. Cl.³ F16H *57/10*; B23B *29/24*; B23Q *17/00*; F16B *2/02*
U.S. Cl. 74—411.5 **5 Claims**



1. A locking arrangement that prevents rotation of an elongated spindle comprising:

gear means mounted on said spindle, said gear means having a plurality of predeterminedly spaced-apart teeth with portions of each of said teeth lying in a first plane which is perpendicular to the longitudinal axis of the spindle;

a rotatably mounted shaft having an axis of rotation which is in skewed relationship with said longitudinal axis of said spindle; and

wedging means including an outer periphery, a rotation point, and spaced-apart opposing camming surfaces inclined toward convergence at said outer periphery, said wedging means mounted on said shaft for rotational displacement about said rotation point, with distances from said outer periphery to said rotation point varying with angular displacement of said wedging means, such that, as said shaft is rotated, said wedging means is interposed between adjacent teeth of said gear means with a component of movement directed toward said spindle such that said camming surfaces engage said teeth of said gear means with a wiping action so as to be wedged between said teeth to thereby lock said spindle in a zero backlash manner.

4,464,949

TOOTHED PULLEY OF PRESSED SHEET METAL

Giuseppe Concina, Cirie' , Italy, assignor to Algat S.p.A., San Carlo Canavese, Italy

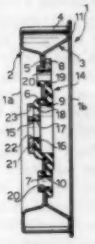
Filed Apr. 8, 1982, Ser. No. 366,512
Claims priority, application Italy, Apr. 17, 1981, 53159/81[U]
Int. Cl.³ F16H *55/12, 55/30*
U.S. Cl. 74—449 **1 Claim**

1. A toothed pulley of pressed sheet metal comprising:

a first sheet metal element including a cylindrical toothed rim having two circumferential end edges, an internal disc having a central aperture and at least one radially outwardly located hole connected to one of said edges and located in a plane perpendicular to the axis of said cylindrical rim substantially equi-distantly from said circumferential end edges and a plurality of axially directed tabs extending from the other end of said rim;

a second sheet metal element including an internal flat disc having a central aperture and at least one radially outwardly located hole mating with the central aperture and each hole in the disc of said first element and an axially offset circumferential flange having a plurality of apertures extending radially outwardly beyond said rim with said tabs extending through said apertures and being bent to connect said first and second elements together; and

a sheet metal hub including a central cup-shaped portion inserted in said mating central apertures of said disc with



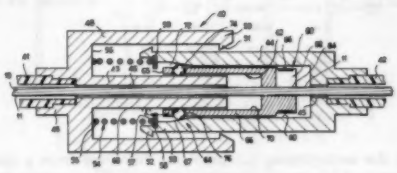
a centrally apertured flat, bottom surface for contact with an end surface of a pulley support shaft and a flat radially outwardly directed circumferential flange having a number of tubular axial projections corresponding to the number of holes in the said disc and extending through each hole with the ends of each projection being bent to secure said hub to said disc.

4,464,950

MECHANICAL CONTROL BY CABLE SLIDING AXIALLY IN A FLEXIBLE SHEATH

Jean Deligny, Le Mans, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Nov. 30, 1981, Ser. No. 325,603
Claims priority, application France, Dec. 11, 1980, 80 26284
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501.5 R **14 Claims**



1. Mechanical control for a cable sliding axially in a flexible sheath, equipped with an automatic adjustment device for varying the length of the sheath in response to clearances appearing in the control, one end of the cable being connected to a receiving member provided with elastic return means to impart a return force to the cable, said adjustment device including two telescopic sheath extensions inserted between two consecutive portions of the sheath to which they are fixed, said adjustment device comprising a wedge-action locking member disposed between the two telescopic sheath extensions to interlock the latter by wedging during actuation of the mechanical control, characterized in that said mechanical control comprises a control member fixed to the locking member and connected to the cable by means of a friction connection, said control member being movable directly by the cable in the direction corresponding to wedging of the locking member in order to actuate the locking member and interlock the two telescopic sheath extensions, said control member being movable directly by the cable in the direction corresponding to unlocking when the return force applied to the cable becomes

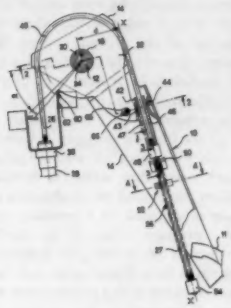
less than a predetermined value and the two telescopic sheath extensions are unlocked.

4,464,951

MECHANICAL CONTROL ASSEMBLY

Pierre Courbot, Villiers le Bel, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Apr. 26, 1982, Ser. No. 371,752
Claims priority, application France, May 29, 1981, 81 10719
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501.5 R **9 Claims**



1. A mechanical control assembly for a receiver (34) of the type comprising engaging members (39) and resilient return means (35) exerting onto at least one of said members a force which the mechanical control assembly must overcome to acutate said receiver, said mechanical control assembly comprising: a pedal (10) adapted to rotatingly pivot on a fixed shaft (12) from and to a rest position; a cable (26) having a first end (25) adapted to be connected to said receiver (34) and a second end portion (27) connected to the pedal (10) by means of a transmission device, characterized in that said transmission device comprises a force-transmitting element (22) pivotally mounted on said fixed shaft (12) and having an outer cylindrical surface (40) onto which said cable (26) is partially wound; a spring means (56) disposed between said second end (27) of the cable and said pedal (10) for tensioning said cable (26); and a locking system causing said force-transmitting element (22), said cable (26) and said pedal (10) to be moved in unison when said pedal (10) pivots from said rest position by an angle greater than a predetermined minimum angle (αm), wherein said locking system acts by catching said cable (26) between a first cathcing surface (42) formed on said force-transmitting element (22) and a second catching surface (44) formed on said pedal (10), said second catching surface (44) cooperating with said first catching surface (42) through said cable (26) to rotate said force-transmitting element (22) to cause said cable to be pulled when said pedal pivots by an angle greater than said predetermined angle (αm).

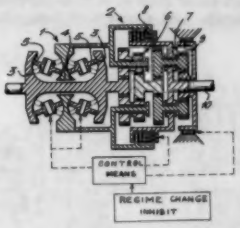
4,464,952

CONTROL SYSTEMS FOR CONTINUOUSLY VARIABLE RATIO TRANSMISSIONS (CVT)

Peter W. R. Stubbs, Hampton Magna, England, assignor to BL Technology Limited, London, England

Filed Jun. 1, 1981, Ser. No. 268,767
Claims priority, application United Kingdom, May 31, 1980, 8017895
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—690 **11 Claims**

1. In a transmission of the type having a continuously variable ratio unit, further gearing, clutch means for operating the transmission in two regimes with synchronous shifting between the regimes, and control means for varying the transmission ratio according to a predetermined control strategy ratio in dependence on load and engine speed, the improvement comprising, means to inhibit regime changing from the synchronous ratio until the synchronous ratio differs from the predetermined control strategy ratio by at least a predetermined value.

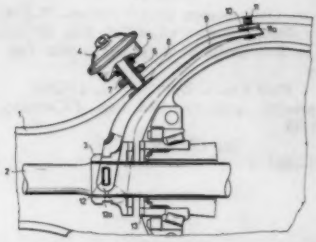


4,464,953

DIFFERENTIAL LOCKING DEVICE WITH THREE-POINT SUPPORT, PARTICULARLY FOR THE CARRIAGE OF PUBLIC VEHICLES

Lóránt Tar, Győr, Hungary, assignor to Magyar Vagon és Gépgyár, Győr, Hungary

Filed Oct. 15, 1981, Ser. No. 311,789
Claims priority, application Hungary, Dec. 23, 1980, 3087/80
Int. Cl.³ F16H *1/44*
U.S. Cl. 74—710.5 **3 Claims**



1. In a differential locking device with three-point support for a carriage of a vehicle having a bridge housing, a fork-shaped clutch lever therein symmetrical about a line therealong with a fork-shaped end and a shank and connected to a clutch hub by a sliding-ring, the device including a pushrod connected to the clutch lever and actuated by an air chamber, the improvement comprising: self-adjusting means connecting one end of the clutch lever shank to the bridge housing and connecting the fork-shaped end to the clutch hub and means mounting the pushrod on the bridge housing between the connections to the fork-shaped end and the shank of the clutch lever at the line of symmetry of the clutch lever, comprising a grooved bush mounted in the clutch lever and receptive of the pushrod and a catch spring for fixing the grooved bush into the clutch lever and the pushrod into the grooved bush.

4,464,954

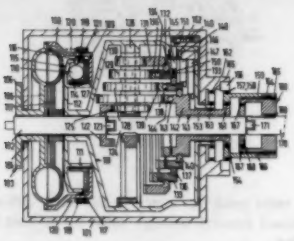
AUTOMATIC TRANSMISSION

Hubertus J. Van Doorne, deceased, late of Deurne, Netherlands (van Doorne, Heir; by Martinus P. J. H.), assignor to Erven Dr. Hubertus Josephus van Doorne, Eindhoven, Netherlands

Filed Sep. 13, 1981, Ser. No. 303,129
Int. Cl.³ F16H *3/74, 37/06, 3/44*
U.S. Cl. 74—752 E **11 Claims**

1. An automatic transmission comprising a speed-dependent clutch, a section cooperating with said clutch for controlling

the transmission ratio between input shaft and output shaft, said section comprising a central shaft carrying at least one radially extending shaft with a plurality of gear wheels mounted on each radial shaft so as to be restrained from rotation relative thereto, said gear wheels being drivable by the



input shaft and each having a different pitch circle, said gear wheels being capable, depending on the desired torque-speed ratio, of selectively cooperating with one of a plurality of corresponding gear wheels which include a torque-dependent spring-loaded means operable to restain said corresponding gear wheel from motion relative to said output shaft.

4,464,955

CONTROL ARRANGEMENT FOR AN AUTOMATIC CHANGE-SPEED TRANSMISSION SERIES-CONNECTED WITH OUTPUT OF DRIVING ENGINE

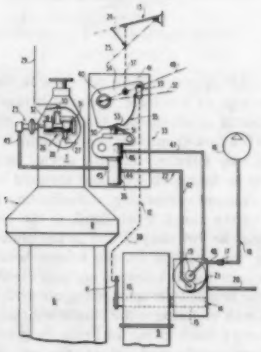
Klaus Martin, Obertshausen; Gunter Jürgens, Waiblingen, and Hermann Gaus, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,492

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931285

Int. Cl.³ B60K *41/10*

U.S. Cl. 74—867 **6 Claims**



1. A control mechanism for an automatic gear shift connected to a driving engine, comprising:

shifting control valve means for gear shifting from a lowest to a higher gear;

manually operable range-selection control valve means and gear-holding valve means responsive to modulating control pressure interconnected with one another in such a way that the shifting control valve means is held in a position engaging a higher gear when the driving engine is idling and the range-selection control valve means is in a position actuating a forward-gear range;

a movable driving pedal connected with a control element of a power control of the driving engine by a control linkage having a free-travel connection;

a back-shift control member operable by the driving pedal for influencing the modulating control pressure in such a way that, when the driving pedal is moved from an idling position and is in the free-travel of the free-travel connection, the control element remains in its idling position while the gear-holding valve means and the shifting control valve means are moved to positions engaging the lowest gear; the driving pedal, beyond the free-travel of the free-travel connection, being kinematically connected with the control element, wherein when modulating control pressure is operable by a vacuum responsive modulating pressure control valve means adjustable to be dependent on torque of the driving engine, the gear-holding control valve has a constant modulating pressure connection to the modulating pressure control valve means;

a pressure-regulating valve for adjusting vacuum at the modulating pressure control valve means as a function of a position of the control element, wherein the back-shift control member is connected with the pressure-regulating valve in such a way that, when the driving pedal is in an idling position, vacuum at the modulating pressure control valve means is adjusted to a pressure value that corresponds to a pressure value of the modulating control pressure, whereby when the gear-holding valve means is held in a position for a higher gear, and, when the driving pedal moves from the idling position into the free-travel of the free-travel connection, the vacuum is brought to a pressure value that corresponds to a pressure value of the modulating control pressure when the gear-holding valve means is in the position for engaging the lowest gear.

4,464,956

CORK-EXTRACTING DEVICE

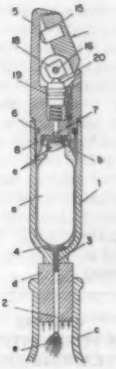
Kenji Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Kenshin, Todoroki, Japan

Filed Jul. 10, 1981, Ser. No. 281,938

Claims priority, application Japan, Jan. 28, 1981, 56-11116

Int. Cl.³ B67B *7/08*

U.S. Cl. 81—3.2 **6 Claims**



1. An improved cork-extracting device comprising: a cylindrical container accommodating a gas bomb filled with gas such as carbonic acid gas, inert gas or the like and having a piercable cap for maintaining the gas within the gas bomb; an insertion needle having a longitudinal air passage communicated with the cylindrical container, the needle being located on the outside and at the bottom of the cylindrical container; a cover for said cylindrical container with a packing for air-tight sealing of said cover to said container, said cover being detachably attached to an opening portion of the cylindrical con-

tainer, the cover having a needle valve that ascends and descends therein to pierce the cap of the gas bomb; said cover further having a resilient valve seat plate at a position opposed to the needle valve and above the piercable cap of the gas bomb, the resilient valve seat plate having a valve seat for said needle which valve seat has a gas supply hole at the center thereof, and lower surface of the resilient valve seat plate being utilized as packing for supporting the piercable cap of the gas bomb which is accommodated in the cylindrical container; a gas-flow path formed between the upper surface of the resilient valve seat plate and the cylindrical container, said gas-flow path formed between the upper surface of the resilient valve seat plate and the cylindrical container comprising a gas-flow groove in the upper surface of said resilient valve seat plate and a gas-flow notch formed in the peripheral portion of the valve seat plate, with said gas-flow groove and said gas-flow notch together forming said gas-flow path; an operation handle fitted to one side of the cover being supported by a rotary shaft and being urged by a spring; and an opening/closing cam provided for the operation rod to maintain the needle valve in a closed state all the time.

4,464,957

FASTENER AND DRIVER COMBINATION

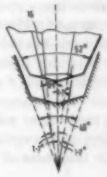
Peter J. Gill, Wolverhampton, England, assignor to GKN Screws & Fasteners Limited, Smethwick, England

Filed Jul. 14, 1981, Ser. No. 283,343

Claims priority, application United Kingdom, Jul. 23, 1980, 8024144

Int. Cl.³ B25B *15/00*

U.S. Cl. 81—460 **2 Claims**



1. In combination, a rotatable fastener having a driving recess and a driver for engagement in the recess, the recess having four equally circumferentially spaced grooves extending radially outwardly from a central cavity with each groove ending in an outer face which tapers towards the bottom of the recess with the included angle between diametrically opposite end faces being 40°–45° and the driver having four equally circumferentially spaced wings projecting radially from a central core for driving engagement with the grooves with each wing ending in an outer edge face tapering in a radial direction with respect to the core towards an end of the driver with the included angle between diametrically opposite edge faces being 52°, the width of the wings at an upper edge of the recess when the driver is in driving engagement with the recess being less than the corresponding width of the grooves whereby the driver can move angularly about its longitudinal axis in the recess to insure driving contact between driver and recess at the upper outer edges of the recess and wherein the width of the grooves taper towards the bottom of the recess to such an extent that the ends of the wings of the driver are adapted to be wedged in the grooves to provide a stable engagement between driver and fastener.

4,464,958

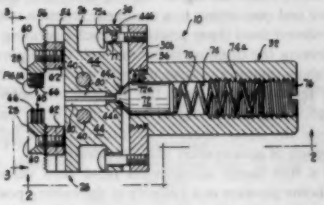
BAR STOCK PULLER

Charles J. Luks, 3001 Wiltshire Rd., North Royalton, Ohio 44133

Filed Apr. 2, 1982, Ser. No. 364,991

Int. Cl.³ B23B *13/02*

U.S. Cl. 82—2.5 **10 Claims**



10. A bar stock puller for a numerical control turning center, turret lathe, screw machine or the like, comprising:

(a) a tool body including a jaw support portion and a portion engageable by a tool holding means;

(b) spaced, opposed jaws including confronting, bar stock gripping surfaces;

(c) jaw support means mounting each jaw to said jaw support portion of said tool body, said jaws mounted for pivotal movement towards and away from each other, about pivotal axes defined by said jaw support portion;

(d) jaw biasing means yieldably urging said jaws toward each other;

(e) said tool holding means including means for aligning said jaws with bar stock to be pulled and including means for imparting reciprocating motion to said tool body along a line of action substantially coincident with the axis of said bar stock; and,

(f) said jaws including camming surfaces contactable with the end of the bar stock to be pulled to effect separation of said jaws to enable said jaws to engage a circumferential surface of said bar stock.

4,464,959

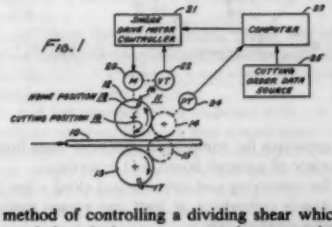
ADAPTIVE CONTROL FOR A DIVIDING SHEAR

Duane B. Larson, Williamsville, N.Y., assignor to Bethlehem Steel Corp., Bethlehem, Pa.

Division of Ser. No. 262,087, May 11, 1981, Pat. No. 4,361,063, which is a continuation of Ser. No. 37,553, May 7, 1979, abandoned. This application Jul. 26, 1982, Ser. No. 401,759

Int. Cl.³ B23D *25/12*; B26D *5/20*

U.S. Cl. 83—37 **4 Claims**



1. A method of controlling a dividing shear which cuts a moving workpiece during one or more shear operating cycles, each operating cycle starting and ending at a home position and having a cutting position therebetween, the method which comprises:

(a) establishing each operating cycle duration and the quantity of the cycles required to make a desired number of cuts into the moving workpiece based on cutting order data;

(b) generating a dividing shear velocity feedback signal during each operating cycle;

(c) generating a dividing shear position signal during each operating cycle;

(d) determining a variable characteristic shear velocity reference signal during each operating cycle in response to cutting order data, the shear velocity feedback signal and the shear position signal, the variable characteristic shear velocity reference signal starting as a linear function with time and converting to a nonlinear function with time at a predetermined shear position in each operating cycle; and

(e) driving the dividing shear through the required number of shear operating cycles under control of the shear velocity feedback signal and the variable characteristic shear velocity reference signal such that during each cutting cycle the shear operates according to the following sequence of acceleration and deceleration:

(i) a first linear acceleration from zero velocity at the home position to a velocity at the cutting position equal to that of the moving workpiece, followed by;

(ii) a second linear acceleration for a preset period of time, followed by;

(iii) a first linear deceleration for a preset period of time, followed by;

(iv) a second nonlinear deceleration during which the velocity and acceleration of the shear are caused to equal zero at the home position, thereby preventing the shear from overshooting or oscillating about the home position.

4,464,960

LEAD CUTTING MACHINE

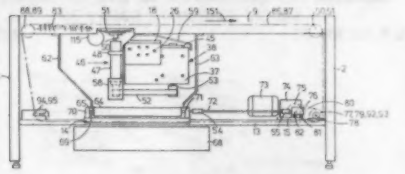
Harry F. Roepers, Breda, and Herman B. Van Tilburg, Oosterhout, both of Netherlands, assignors to Soltec B.V., Oosterhout, Netherlands

Filed Dec. 31, 1981, Ser. No. 336,163

Claims priority, application European Pat. Off., Oct. 29, 1980, 80201027.2

Int. Cl.³ H05K *13/04*

U.S. Cl. 83—104 **17 Claims**



1. An apparatus for trimming component leads protruding from a surface of a circuit board, and comprising:

means for conveying said circuit board along a line of feed;

cutter means comprising at least one rotary cutting disc having a rotation axis;

means for displacing said cutter means laterally across said line of feed to effect said lead trimming during said conveying, wherein said cutting disc is generally parallel to said circuit board surface during said displacing and trimming; and

means for independently adjusting speeds of said conveying means and said displacing means.

4,464,961

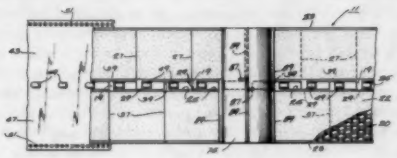
BATTERY PLATE STRIP DIVIDING APPARATUS

James M. Tule, Watervliet, and Ned L. Stauffer, St. Joseph, both of Mich., assignors to Mac Engineering & Equipment Co., Inc., Benton Harbor, Mich.

Filed Nov. 25, 1981, Ser. No. 324,800

Int. Cl.³ B23D *25/12*; B26D *1/62*

U.S. Cl. 83—346 **13 Claims**



1. Apparatus for cutting a strip of battery plate material into a plurality of battery plates, the strip of battery plate material having a width and a thickness, which strip of battery plate material includes a series of longitudinally evenly spaced apertures, which apparatus comprises a frame, a plurality of support rollers rotatably mounted on said frame, an endless belt trained around said support rollers on an endless path, said belt including an inner surface and an outer surface having thereon a plurality of longitudinally evenly spaced lugs adapted, when the strip is overlayed on said belt, to engage the strip apertures for advancing the strip in common with advancement of said belt, said belt being sufficiently wide that substantially all of said strip is supported by said belt, drive means on at least one of said support rollers and said endless belt for advancing said belt along said endless path, a cutter roller mounted on said frame for rotation and for translation toward and away from said belt, said cutter roller having, on the periphery thereof, cutting means for cutting the strip into battery plates in response to passage of the strip between said cutter roller and said belt and in response to rotation of said cutter roller, said cutting means including knives supported by said roller, said knives extending radially from said roller to said belt such that said knives cut through said strip but wherein said knives do not cut said belt, means for rotatably driving said cutter roller such that the rate of peripheral travel of said cutting means is substantially equal to the rate of advancement of said belt, and means for yieldably urging said cutter roller toward said belt such that the distance between said periphery of said roller and said belt is substantially the thickness of the strip of battery plate material.

4,464,962

ADJUSTABLE MITER GUIDE DEVICE

Ragnvald Myhre, Box 148, R.D. #1, Greenville, N.Y. 12083

Filed Sep. 16, 1982, Ser. No. 418,806

Int. Cl.³ B27B *25/08*

U.S. Cl. 83—425 **8 Claims**

1. For use with a saw table having parallel tracks on a worksurface with a saw blade extending upwardly therebetween, an adjustable miter guide device slidable along said tracks for holding at least two workpieces in overlapped relation on the worksurface and moving them into cutting engagement with the blade, said device comprising:

(a) first and second right and left hand assemblies for association with the respective tracks each comprising

i. a runner slidable along the track,

ii. a cross arm attached to the runner and adapted to lie on the worksurface,

iii. pivot means at one end of the cross arm,

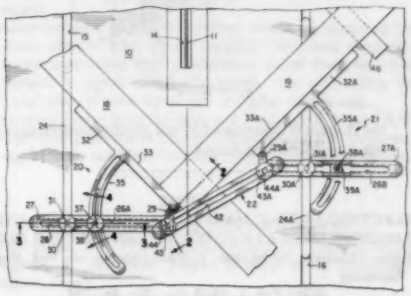
iv. first adjustable connecting means remote from the pivot means for fixing the cross arm to the runner in a selected angular and linear position,

v. a guide rail pivoted at one end to the cross arm by the pivot means and adapted to lie on the worksurface; and

vi. second adjustable connecting means remote from the pivot means for fixing the guide rail to the cross arm in a selected angular position;

(b) a common link attached to the cross arms of the two guide assemblies and adapted to bridge over the saw blade; and

(c) third adjustable connecting means for fixing the common link to the respective guide assembly cross arms in a selected angular and linear position relative thereto;



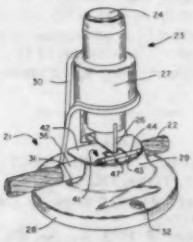
(d) whereby the two guide rails of the two guide assemblies can be fixed in one of an infinite variation of positions relative to the runners with one workpiece disposed laterally against one guide rail and the other workpiece disposed laterally against the other guide rail with an end portion overlapping the firstmentioned workpiece and abutting the firstmentioned guide rail for movement together into cutting engagement with the saw blade.

4,464,963

IMPACT-TYPE WIRE ROPE CUTTER WITH FRAGMENT GUARD

John R. Paul, Alamo, Calif., assignor to Morse-Starrett Products Company, Oakland, Calif.

Filed Jul. 6, 1982, Ser. No. 395,689
Int. Cl.³ B26D *5/08*
U.S. Cl. 83—546 **7 Claims**



1. An impact-type wire rope cutter including a body formed for support of a length of wire rope during cutting, and chisel means having an impact surface and a blade portion and movably mounted to said body for displacement of said blade portion into cutting engagement with said wire rope upon impact of said impact surface by an impact tool, wherein the improvement in said wire rope cutter is comprised of:

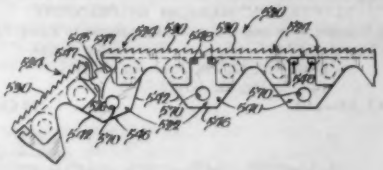
fragment guard means mounted to said cutter for movement while coupled to said cutter between an open position permitting mounting of said wire rope on said body for cutting and a closed position at which said guard means is positioned closely proximate and above said wire rope, said guard means being formed to define slot means dimensioned for receipt and downward displacement of said blade portion through said slot means to enable cutting of said wire rope with said guard means in said closed position without damage to said guard means, and said guard means in said closed position extending sufficiently close around said blade portion and extending a sufficient distance away from said slot means receiving said blade portion to prevent unimpeded expulsion of wire fragments from said wire rope cutter in an upward direction during cutting of said wire rope.

4,464,964

ARTICULATED SAW

Carl J. Alexander, 54092 Wilbur Rd., Three Rivers, Mich. 49093

Continuation-in-part of Ser. No. 59,985, Jul. 23, 1979, Pat. No. 4,309,931, which is a continuation-in-part of Ser. No. 944,202, Sep. 19, 1978, abandoned, Continuation of Ser. No. 697,978, Jun. 21, 1976, abandoned. This application Jan. 11, 1982, Ser. No. 338,235
Int. Cl.³ B27B *17/02*
U.S. Cl. 83—830 **10 Claims**



1. A saw blade comprising:

an endless array of substantially planar cutting members which are disposed substantially end to end to form a substantially planar, articulated band;

each substantially planar cutting member in said endless array having a pair of opposed top and bottom longitudinal margins, a pair of end margins, and a plurality of cutting teeth disposed along said top margin to define a cutting face thereon;

said planar cutting members being situated in said array so as to present a circumferential row of cutting teeth about the periphery of said articulated band, said array of cutting members being adapted to define at least a cutting segment of said band wherein said cutting faces of a plurality of said cutting members define and lie along a cutting surface;

each cutting member including a pair of spaced-apart sidewalls open along the cutting member bottom longitudinal margin opposite the cutting teeth and connected together inwardly of said bottom longitudinal margin of the cutting member;

said saw blade further comprising planar link members in spaced end-to-end relationship, each said link member having a pair of end margins and a pair of opposed top and bottom longitudinal margins;

each said link member being disposed with one of its end margins received between said spaced-apart sidewalls at one end of one of said cutting members and with the other end margin received between said spaced-apart sidewalls at one end of another of said cutting members;

said saw blade further comprising means for pivotally connecting each end margin of each link member to the receiving sidewalls of an adjacent cutting member;

each said link member having its bottom longitudinal margin extending below the bottom longitudinal margins of the two cutting members pivotally connected to said link member when the two connected cutting members are oriented to lie in a generally straight line, said link member bottom longitudinal margin defining a bearing face for

being disposed in a peripheral slot of a saw blade support and slidably bearing against the bottom of the slot;

each said link member having an upwardly facing abutment surface projecting upwardly at said top longitudinal margin of said link member between two spaced-apart notches defined in said link member;

each said cutting member having a downwardly facing engaging surface at each said end margin of said cutting member for engaging the abutment surface of a connected link member; and

the relationship between said abutment surface of one link member and the engaging surf ces of two cutting members pivotally connected to said one link member being one of engagement when the two connected cutting members are oriented to lie in a generally straight line, said engagement thereby preventing rotation of the cutting faces of the two connected cutting members toward each other from said straight line orientation but permitting rotation of the cutting faces away from each other.

4,464,965

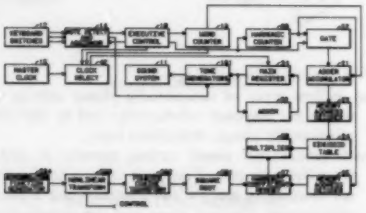
AUTOCORRELATION TONE GENERATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument MFG. Co., Ltd., Hamamatsu, Japan

Filed Nov. 12, 1982, Ser. No. 441,014

Int. Cl.³ G10H *7/00*

U.S. Cl. 84—1.01 **14 Claims**



14. In a musical instrument apparatus for producing musical tone comprising;

an autocorrelation function generator for generating an autocorrelation function

a first computing means responsive to said autocorrelation function for creating a set of harmonic coefficients,

a second computing means responsive to said set of harmonic coefficients for generating a sequence of data values corresponding to said musical tones, and

a means for producing musical tones from said sequence of data values.

4,464,966

RHYTHM DATA SETTING SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Hideaki Ishida, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 382,931

Claims priority, application Japan, Jun. 5, 1981, 56-85650

Int. Cl.³ G10H *1/40, 3/06, 7/00*

U.S. Cl. 84—1.03 **17 Claims**

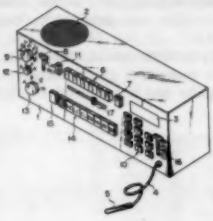
1. A rhythm data setting system for an electronic musical instrument, comprising:

a bar code reader for reading out bar codes representing rhythm pattern data recorded on a recording medium;

memory means arranged to be coupled to said bar code reader for digitally storing the rhythm pattern data read out by said bar code reader;

reading means coupled to said memory means for reading out the stored rhythm pattern data; and

producing means associated with said reading means for generating a rhythm performance wherein the pattern of



the rhythm is determined by the rhythm pattern data read out by said reading means.

4,464,967

ELECTRIC GUITAR HAVING A GUITAR BODY AND A LOUDSPEAKER ATTACHED TO SAID GUITAR BODY

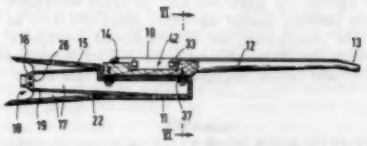
Reiner Trimborn, Sieboldstr. 1, 5000 Cologne 60, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,785

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203844

Int. Cl.³ G10H *3/18*

U.S. Cl. 84—1.16 **9 Claims**



1. An electric guitar comprising a hollow and nonresonant guitar body, a guitar neck attached to said guitar body, strings adapted to perform swinging movements, pick-up means taking up the swinging movements of said strings and converting them into an electric signal, said electric signal being amplified by amplification means and transferred to a loudspeaker attached to said guitar body and an acoustical horn being arranged inside said guitar body and having an entrance opening facing said loudspeaker and a mouth of larger sectional area than the entrance opening forming an opening of said guitar body.

4,464,968

SYSTEM FOR STORING AND READING OUT MUSICAL TONE SIGNALS

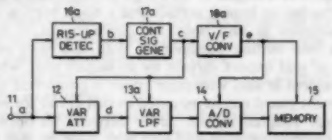
Hideo Onoye, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed May 25, 1983, Ser. No. 498,161

Claims priority, application Japan, Jun. 3, 1982, 57-95371

Int. Cl.³ G10H *3/03*

U.S. Cl. 84—1.28 **14 Claims**



1. A storing system for a musical tone signal comprising:

supplying means for supplying an input musical tone signal

having a frequency versus level characteristic which varies with time;

first control signal generating means for generating a control signal which undergoes level variation in correspondence with the variation in said characteristic of the input musical tone signal supplied from said supplying means;

first frequency signal producing means supplied with the control signal generated from said first control signal generating means, for producing a frequency signal which varies its frequency according to the level of said control signal;

analog-to-digital (A/D) converting means for sampling the input musical tone signal supplied from said supplying means according to the frequency signal from said first frequency signal producing means, and converting the input musical tone signal into a digital signal; and

a memory into which the output digital signal of said A/D converting means is stored according to the frequency signal from said first frequency signal producing means.

4,464,969

SPEED GOVERNOR FOR MUSIC BOX

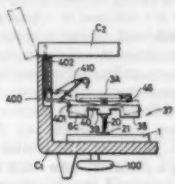
Akihiko Isaka, and Tooru Takenaga, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Aug. 27, 1982, Ser. No. 412,063

Claims priority, application Japan, Apr. 20, 1982, 57-57144; May 7, 1982, 57-76203

Int. Cl.³ G10F *1/06*

U.S. Cl. 84—95 R **7 Claims**



1. A speed regulating device for a music box, comprising; a drive source, drum means having a plurality of pins, metal diaphragm means having a plurality of associated reeds, and gear train means regulated by said speed regulating device, said gear train means being coupled to said drum means to drivingly rotate said drum means, said speed regulating device comprising a worm gear driven by said gear train means; a worm shaft fixed to said worm gear; a rotor unit including weight parts and elastic parts which are elastically deformable; brake means capable of contacting said weight parts, wherein at least one end of said elastic parts is positioned to deviate in an axial direction of said worm shaft from a radial plane which includes the centers of gravity of said weight parts, and stopping means having a stop member movable to a position in the rotational path of said weight parts to thereby stop the rotation of said rotor unit, said stop member being movable in a direction other than a direction of the extension of said elastic parts of said rotor unit.

4,464,970

GUITAR BRIDGE SYSTEM

Matthew Mischakoff, 3446 Brassow Rd., Saline, Mich. 48176

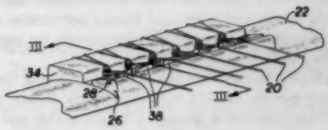
Filed Oct. 18, 1982, Ser. No. 434,824

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—298 **6 Claims**

1. A bridge system for a multiple stringed instrument wherein the bridge includes an elongated slot having substantially parallel spaced sides, the improvement comprising, a plurality of string rests supported within the bridge slot, each rest supporting a separate string, said rests each including end edges, a base region having spaced parallel sides closely received within the bridge slot and an upper string engaging region extending between said end edges, said upper region including an upper edge having a plurality of string engagable notches defined therein, the spacing of said notches from said base region varying whereby the spacing of a supported string from the bridge slot may be selectively adjusted.

5. A string support for varying the unsupported length of a single string of a stringed instrument wherein the string support rests upon the instrument neck and may be moved thereon, comprising, in combination, a body having a flat bottom surface, an upper surface, ends and sides, said body adapted to be supported upon the instrument neck upon said bottom surface, said upper surface being obliquely related to said bottom surface, and a plurality of spaced string receivable notches defined in said upper surface whereby the distance between each notch and said bottom surface varies.



4,464,971

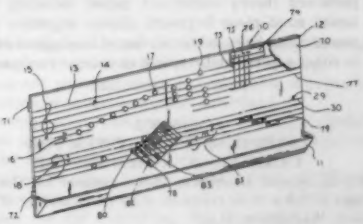
MUSICAL EDUCATION DISPLAY APPARATUS

Leslie A. Dean, 3950 N. Lake Shore, Chicago, Ill. 60613

Continuation-in-part of Ser. No. 141,042, Apr. 17, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,376

Int. Cl.³ G09B *15/02, 15/04*

U.S. Cl. 84—471 R **23 Claims**



1. A musical education apparatus for displaying musical notation for purposes of musical instruction and composition, said apparatus comprising:

display board means including a substantially flat planar display board having at least one side exposed to a user;

staff indicia means restrainably attached at its first side to said substantially flat display board;

staff indicia means having indicia attachment means on its second side, opposite to said first side, for the removable attachment of musical notation indicia means thereon;

clef indicia means operably attached to said staff indicia means and which cooperates with said staff indicia means to denote the particular clef of said staff;

said notation indicia means comprising a plurality of musical notation indicia having a front side and a back side thereto;

said back side of said musical notation indicia means having indicia attachment means which cooperate with the indicia attachment means on the second side of said staff indicia means to permit said removable attachment of said notation indicia means to said staff indicia means at any position atop said staff indicia means;

said notation indicia means having duration indicia associated therewith to denote the particular length of time

which each of said notation indicia means is to be accorded musical significance;

teaching theory conversion means for converting and enabling said staff indicia means to be used with a variety of alternative musical education training devices;

said teaching theory conversion means having conversion attachment means operably associated therewith so as to enable the operable removable attachment of said teaching theory conversion means atop one or more of said display board means, said staff indicia means, said notation indica means and other said theory conversion means in any position relative thereto, respectively, for unrestricted positionable display thereupon;

said teaching theory conversion means enabling the aligned superimposing of said notation indicia means with said teaching conversion means to, in turn, enable said notation indicia means, said staff indicia means and said theory conversion means to be simultaneously visible to a user while in said superimposed alignment;

said indicia attachment means on said notation indicia means and said theory conversion attachment means on said theory conversion means enabling the superimposed aligned display of at least one said theory conversion means in a first layer position, with at least two or more other ones of said theory conversion means and notation indicia means in at least a second and third respective layer position, to in turn provide a three layered superimposed simultaneous display capability among said three or more layers of said notation indicia and theory conversion means respectively positioned atop one or more of said display board and said staff indicia means, and

said staff indicia means and said notation indicia means being proportioned in size to accommodate and operably display said musical instruction and composition with proportioned theory conversion means including proportioned sized piano keyboard display segments, proportioned chime bells and proportioned hand signal members, in either a horizontal, vertical or oblique configuration.

4,464,972

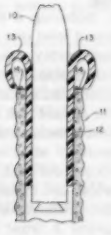
LATERAL SUPPORT SYSTEM FOR CANISTER-LAUNCHED MISSILE

Wayne E. Simon, Evergreen, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 15, 1983, Ser. No. 475,665

Int. Cl.³ F41F *3/04*; F16J *15/10*

U.S. Cl. 89—1.816 **4 Claims**



1. A system for supporting a missile within its launch canister and for sealing the annular gap between said missile and canister, which comprises:

a. a plurality of elongate flexible pads disposed lengthwise on the outer surface of said missile; and

b. means hingedly attaching one end of each said flexible pads to said canister near the exit opening thereof.

4,464,973

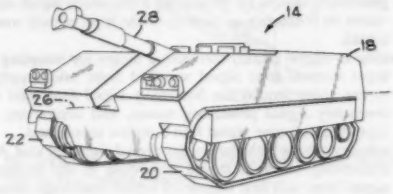
HYDROSTATIC REACTION TRANSMISSION

Waldo E. Rodler, Jr., San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Nov. 12, 1981, Ser. No. 320,256

Int. Cl.³ B62D *11/18*

U.S. Cl. 89—40 B **18 Claims**



1. A hydrostatic reaction steering transmission for a mobile vehicle, which transmission includes power means connected in driving engagement to rotatable right and left brake drum carriers that are connected in driving engagement to right and left ground engaging elements through right and left planetary gear trains, right and left operator controlled brake means for simultaneously stopping or releasing said brake drum carriers for rotation, a steering gear train operatively connected between a steering input shaft and said right and left planetary gear trains for driving the right and left planetary gear trains in opposite directions when said brake drum carriers are stopped and for applying steering torque in opposite directions when said brake drums are released in response to rotation of said steering input shaft, and operator controlled variable speed reversible steering drive means for maintaining said steering input shaft stationary or for driving said input shaft in selected directions; the improvement which comprises means defining a reaction steering differential, said reaction steering differential including a housing within which said differential input and output shafts are journaled, differential means within said housing including a planetary gear train having an input portion operatively connected to said differential input shaft and an output portion operatively connected to said differential output shaft, and torque controlling means within said housing operatively connected to said output portion of said planetary gear train, said torque controlling means being effective to compensate for low speed inaccuracies in said steering drive means by controlling differential input shaft speeds from said steering drive means that are faster than about 40 revolutions per minute before sufficient torque is provided to rotate said steering input shaft.

16. An apparatus according to claim 1 wherein said vehicle is a casemate military vehicle having a chassis with a gun secured thereto that is aimed in azimuth by steering the vehicle; said steering differential enabling said vehicle to be steered in place with said brakes locked and to precisely aim the gun in azimuth at low speed rates of about 0.5 mil per second.

4,464,974

DEVICE FOR THE SHOOTING SIMULATION OF SIGHT-CONTROLLED MISSILES

Wilfried Goda, Hamburg, Fed. Rep. of Germany, assignor to Precitronic Gesellschaft, Hamburg, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 381,930

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121488

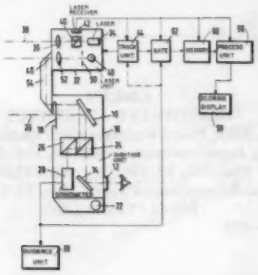
Int. Cl.³ F41G *3/32*

U.S. Cl. 89—41 L **10 Claims**

1. A device for evaluating the sighting of a target by a sighting unit along its line-of-sight during shooting simulation of a sight-controlled missile where the missile is guided by a guidance means to follow the line-of-sight of the sighting unit, the sighting unit including an angle measuring means for measur-

ing the angle between the radiation received from the missile and the line-of-sight of the sighting unit, the device comprising:

(a) a laser transmitter/receiver coupled to the sighting unit with independent movement thereto in at least one direction, for transmitting a laser beam in a transmitting direction to the target and for detecting reflected laser light therefrom, said transmitter/receiver generating a reference light beam having a direction parallel to the transmitting direction of the transmitted laser beam;



(b) a focusing means attached to the sighting unit for focusing the reference beam into the sighting unit and onto the angle measuring means, said angle measuring means generating misalignment signals representing the angle deviation between the reference beam and the line-of-sight of the sighting unit; and

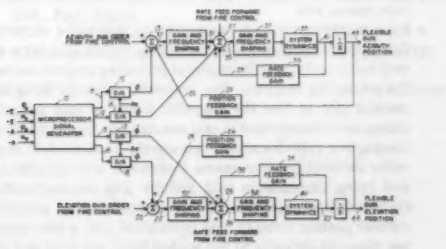
(c) a processing means responsive to the misalignment signals and said laser transmitter/receiver for evaluating the sighting of the target by the sighting unit.

4,464,975

CONTROL OF DISPERSION OF GUN SYSTEMS

Edgar R. Terry, Richmond, and Joseph A. Hudock, Shelburne, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Dec. 29, 1981, Ser. No. 335,436
Int. Cl.³ F41G *5/00*
U.S. Cl. 89—41 SM **6 Claims**



1. A gun system for controlling the dispersion pattern of a plurality of projectiles fired sequentially in a uniform series by a high rate of fire gun, and which pattern is obtained by varying the orientation of the line of sight of the gun, comprising:

a servomechanism, coupled to the gun, for receiving two mutually orthogonal primary signals which are a function of gun direction orders, and which orders are a function of the instantaneous slant range to the target and the instantaneous velocity of the target, and for orienting the line of sight of the gun in response to said primary signals;

a control means, coupled to said servomechanism, for supplying two mutually orothogonal additional signals to said servomechanism to be respectively combined with said two mutually orthogonal primary signals, which additional signals are a function of the desired dispersion pattern at the target of the projectiles fired by the gun, the future slant range to the target, and the instantaneous velocity of the target;

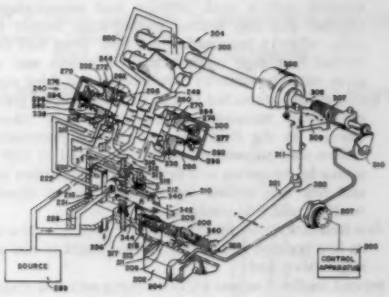
whereby, over a period of time, as the instantaneous slant range to the target and the instantaneous velocity of the target may vary, the dispersion pattern of the projectiles at the target remains constant.

4,464,976

TWO-STAGE PNEUMATIC SERVOMOTOR

Henry P. Tyler, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 91,637, Nov. 5, 1979. This application Mar. 9, 1982, Ser. No. 356,553
Int. Cl.³ F15B *13/16*
U.S. Cl. 91—365 **7 Claims**



1. A two-stage pneumatic servo valve assembly for controlling a pneumatic powered output motor comprising:

a pneumatic powered output motor capable of providing a mechanical output in opposite directions;

a two-stage servo valve means for coupling a pneumatic fluid source to said output motor to drive said output motor in opposite directions;

an input means coupled to said two-stage servo valve means for converting an input signal to a mechanical output signal and for controlling said two-stage servo valve means to drive said output motor in opposite directions;

wherein said two-stage servo valve means comprises;

a first-stage valve means for controlling fluid flow from said pneumatic fluid source to a second-stage valve means, said first-stage valve means comprising a first-stage input channel for receiving pneumatic fluid from said pneumatic fluid source, first and second first-stage output channels for supplying pneumatic fluid from said first-stage input channel to said second-stage valve means, and a vane valve coupled to said input means for movement thereby, said vane valve having an annular ring on an end thereof, said first stage input channel being connected to the center of said annular ring, said vane valve being pivoted by said input means to move said annular ring between a first position, wherein fluid communication between said first-stage input channel is restricted from flowing from the center to both the first and second first-stage output channels, a second position, wherein a fluid communication path is open between said center and a first arcuate port of said first first-stage output channel while a second arcuate port for said second first-stage output channel is communicated to the surrounding environment, and a third position, wherein a fluid communication path is open between said center of the arcuate ring and the second arcuate portion of said second first-stage output channel while said first arcuate port of said first first-stage output chan-

nel is communicated to the surrounding environment, said mechanical output signal of said input means being coupled to said first-stage valve to move said vane valve from its first position to one of said second and third positions;

said second-stage valve means for controlling fluid flow from said pneumatic fluid source to said output motor, said second-stage valve means comprising a second-stage input channel for receiving pneumatic fluid from said pneumatic fluid source, first and second-stage output channels for supplying pneumatic fluid from said second-stage input channel to said output motor;

first and second pistons operatively connected with said first and second first-stage output channels, said first and second pistons being movable between a first position wherein fluid communication between said second-stage input channel is restricted to both the first and second second-stage output channels, a second position, wherein a fluid communication path is open between said second-stage input channel and said first second-stage output channel only, and a third position, wherein a fluid communication path is open between said second-stage input channel and said second second-stage output channel only, wherein pneumatic fluid flow from said first and second first-stage output channels moves said second-stage valve between its first, second, and third positions;

spring means connected to said first and second pistons for preventing transient movements thereof caused by changes in the fluid pressure of said pneumatic fluid source, and adjustment means connected to said spring means for centering said first and second pistons between said first and second second-stage output channels to establish said first position;

first feedback means for moving said first-stage valve toward its first position in response to movement of said second-stage valve; and

second feedback means for controlling said first-stage valve to move said second-stage valve towrd its first position in response to said output motor mechanical output.

4,464,977

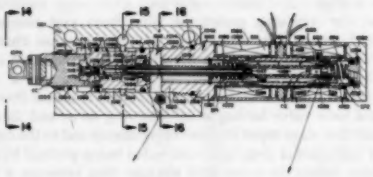
FLUID PRESSURE DEVICE

Robert W. Brundage, 135 Paradise Rd., Painesville, Ohio 44077

Continuation-in-part of Ser. No. 205,214, Nov. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 189,913, Oct. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 51,843, Jun. 25, 1979, abandoned, and Ser. No. 51,844, Jun. 25, 1979, abandoned. This application Jul. 1, 1982, Ser. No. 394,160

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—376 R **67 Claims**



1. A magnetically controlled fluid pressure device comprised of:

(a) a housing having an elongated cylindrical cavity;

(b) an operating member axially movable in said cavity with one axial end defining with said cavity a closed control pressure chamber;

(c) a controlled component operatively associated with said operating member;

(d) a high pressure passage and a separate low pressure passage, one communicating high pressure and the other low pressure, respectively, with said chamber, at least one of said passages moving with said member and radially opening outwardly into said chamber;

(e) means restricting the flow of fluid through each of said passages, including a magnetically permeable control element movable within said control pressure chamber and operable when moved relative to said one passage to restrict or open same relative to the other passage; and

(f) controllable magnetic means operable to position said element to desired positions within said chamber.

4,464,978

SERVOVALVE APPARATUS

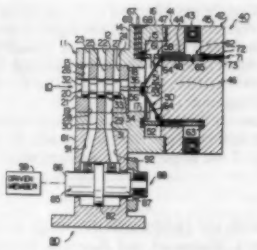
Ken Ichiryu, Mito; Haruo Watanabe, and Masami Nemoto, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,860

Claims priority, application Japan, Mar. 23, 1981, 56-40350

Int. Cl.³ F15B *13/044*

U.S. Cl. 91—459 **18 Claims**



1. A servovalve apparatus comprising:

a servovalve including a valve body having therein a bore and a valve element received in said bore for reciprocal movement; and

a force motor operatively connected to said valve element for reciprocating said valve element, within said bore in said valve body, said force motor including magnet means for producing magnetic flux, magnetic means defining an annular gap so that the magnetic fluxes of said magnet means are concentrated in said annular gap, an electrically conductive cylindrical coil operatively connected to said valve element for movement therewith, said cylindrical coil being disposed in said annular gap concentrically therewith and reciprocatable in response to an electric current passing through said cylindrical coil, a first stopper disposed opposite to but spaced from one axial end of said cylindrical coil and a second stopper disposed opposite to but spaced from the other axial end of said cylindrical coil, and first and second cylindrical spring means made of heat-conductive material and serially arranged in axially aligned relation with said cylindrical coil, said first cylindrical spring means being disposed between said first stopper and said one axial end of said cylindrical coil and said second cylindrical spring means being disposed between said second stopper and said other axial end of said cylindrical coil to thermally connect the opposite axial ends of said cylindrical coil to said first and second stoppers, respectively and to bias said cylindrical coil axially to a neutral position.

4,464,979

DRIVE FLANGE SWASH PLATE MACHINES

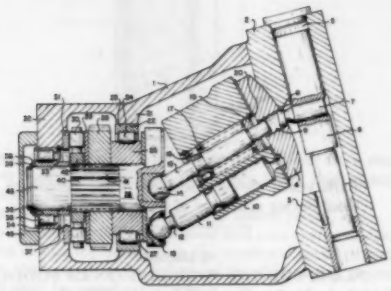
Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed May 6, 1982, Ser. No. 375,560

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3119033

Int. Cl.³ F01B *13/04;* **F16H** *23/00*

U.S. Cl. 91—499 **6 Claims**



1. In a drive-flange axial piston machine having a housing, a rotating cylinder drum in said housing, a fluid pressure chamber in said cylinder drum, a piston reciprocable in said fluid pressure chamber and a drive-flange shaft rotating with said cylinder drum, the improvement comprising a pair of radial bearings supporting said shaft at longitudinally spaced positions in said housing, a separate torque transmitting element spaced from the drive-flange and axially movable and engageable on said shaft intermediate said radial bearings, and an axial bearing between said torque transmitting element and said housing located on the side of the torque transmitting element opposite the drive flange and carrying the axial thrust of the drive flange through the torque transmitting element.

4,464,980

BELLOWS ACTUATOR

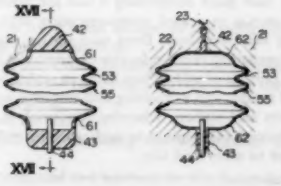
Hideo Yoshida, Fujinomiya, Japan, assignor to Nihon Plast Co., Ltd., Fuji, Japan

Filed Jun. 11, 1981, Ser. No. 272,530

Claims priority, application Japan, Jun. 19, 1980, 55-83157

Int. Cl.³ F01B *19/04*

U.S. Cl. 92—34 **6 Claims**



1. A bellows blow-molded from a parison of a thermoplastic elastomeric material in a mold cavity defined in a mold including at least two mold parts which can be abutted or separated apart when parisons are placed in the mold, the line of abutment forming a parting line between the mold parts; said bellows comprising:

a hollow accordion-type convolution section, including a plurality of convolutions lying between axially opposite ends of said convolution section, for causing the axial dimension of the bellows to be changed when the interior of the bellows is subjected to a variation in fluid pressure; and

end sections integral with the opposite ends of said accordion-type convolution section, respectively;

at least one of said end sections having an axial protrusion integrally formed on and axially outwardly extending from the central area of said one end section, and a shoulder interconnecting said protrusion and the convolution disposed at one of the ends of said accordion-type convolution section;

said shoulder having circumferentially alternating concave and convex portions located along a cross-section defined by a plane perpendicular to the longitudinal axis of the bellows, the center of each portion being generally 90 degrees apart from its adjacent portion.

4,464,981

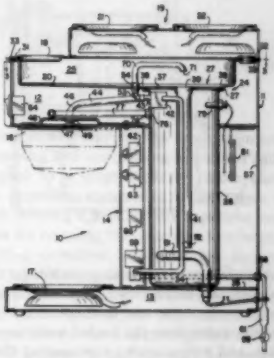
BEVERAGE MAKING MACHINE WITH HOT WATER FAUCET

Kenneth W. Stover, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Filed Apr. 1, 1983, Ser. No. 481,578

Int. Cl.³ A47J *31/057*

U.S. Cl. 99—280 **8 Claims**



1. Beverage brewing apparatus capable of operating automatically comprising, in combination, a cold water basin provided with a drain opening, a cold water inlet line for supplying cold water to said basin from a pressurized water supply, valve means in said cold water inlet line for opening and closing said line, valve actuator means for opening and closing said valve means to either allow cold water to flow through said cold water inlet line and into said basin or prevent cold water from flowing through said line, a hot water tank under said basin, means for heating water in said tank, a cold water tube having its upper inlet end connected to said drain opening and having its lower outlet end disposed in the lower portion of said hot water tank whereby cold water in said basin empties by gravity into the lower portion of said hot water tank, a hot water spray head, a siphon tube interconnecting said spray head with a first hot water outlet opening adjacent the top of said hot water tank whereby hot water displaced by cold water entering the lower portion of said tank flows through said siphon tube to said spray head through which it discharges, means for supporting a brewing funnel beneath said spray head, a hot water faucet, a second hot water outlet opening adjacent the top of said hot water tank and at an elevation below said first hot water outlet opening and above said hot water faucet, a hot water faucet tube interconnecting said faucet with said second hot water outlet opening, level control means operatively associated with said valve means for opening said valve means allowing cold water to flow into said basin when the level of water in said tank falls below a prede-

termined level and for closing said valve means when the level of water in said tank reaches said predetermined level, timer means operatively associated with said valve means for opening said valve means and for closing said valve means a predetermined time after such opening thereby allowing a predetermined quantity of cold water to flow to said basin when said timer means is actuated, control means for disabling said level control means when said timer means is actuated and for reenabling said level control means when said timer means is not actuated.

4,464,982

ELECTRIC COFFEE MACHINE WITH CENTRIFUGAL FILTER

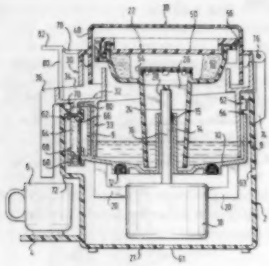
Udo Leuschner, Traunwalchen, and Alfons Zinsberger, Laufen, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 421,022

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137666; Sep. 22, 1981, 3137688

Int. Cl.³ A47J *31/00*

U.S. Cl. 99—287 **19 Claims**



1. Electric coffee machine with a centrifugal filter, a heated water bowl disposed therebelow, a rotatable transporter intermediate to the water bowl and the centrifugal filter for transporting boiling water from the heated water bowl to the centrifugal filter, and with a casing surrounding the water bowl, comprising means for mounting the centrifugal filter on the water bowl, means for rotating the centrifugal filter relative to the water bowl, and elastic buffer elements yieldingly supporting the water bowl on the casing.

4,464,983

PERCOLATOR INCLUDING PUMP-TYPE DISPENSER

William A. Chappell, Raytown; William J. Tweed, Kansas City, and David T. Higgins, Lee's Summit, all of Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Dec. 27, 1982, Ser. No. 453,787

Int. Cl.³ A47J *31/00*

U.S. Cl. 99—312 **15 Claims**

1. A percolator/dispenser comprising:

an insulated vessel;

a spout extending between the interior and the exterior of the vessel;

a perforated basket inside the vessel;

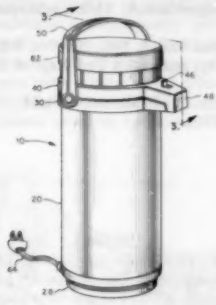
percolator means for causing a liquid contained in the vessel to percolate through the basket, said percolator means comprising:

a heater; and

a percolator tube extending upwardly from the heater to conduct the liquid heated by the heater to a portion of the interior of the vessel above the basket;

a manually operated pump mounted to the vessel and operative to pump the liquid out of the spout; and

means for providing a vent path which is open between an upper portion of the interior of the vessel and the exterior



of the vessel during operation of the percolator and is closed during operation of the pump.

4,464,984

PLANT FOR THE PREPARATION OF FODDER

Hinrich A. Haake, Gut Stellmoor, D-2070 Ahrensburg, Fed. Rep. of Germany

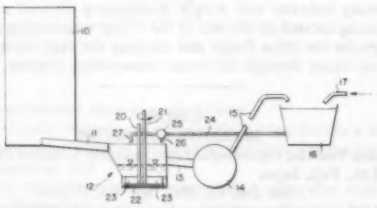
PCT No. PCT/EP81/00122, 371 Date Apr. 8, 1982, 102(e) Date Apr. 8, 1982, PCT Pub. No. WO82/00566, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 13, 1981, Ser. No. 369,015

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3031030

Int. Cl.³ A23N *17/00*; A01F *25/20*

U.S. Cl. 99—479 **15 Claims**



1. A plant for the preparation of fodder comprising a portion of solid foodstock in the form of grains or kernels and a portion of water, said plant comprising a silo for holding said foodstock, a means in sealed communication with said silo for removing said foodstock from said silo, a water-containing siphon disposed to receive foodstock removed by said means, at least a portion of said siphon being in sealed communication with said means, and a crushing mill disposed to receive foodstock from said siphon, whereby foodstock is removed and passed through said siphon to said crushing mill without permitting air to enter said silo.

4,464,985

PRESSING ROLLER DRIVE DEVICE

Tetsu Asanuma, Saitama, and Tsutomu Miura, Kanagawa, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,735

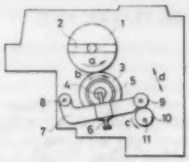
Claims priority, application Japan, Aug. 3, 1981, 56-122323

Int. Cl.³ B30B *14/00, 12/00*

U.S. Cl. 100—47 **6 Claims**

1. An apparatus for moving a pressing roller into and out of engagement with a fixing roller in a copying machine; said

copying machine further comprising an arm coupled to a rotary shaft of said pressing roller and having a cam follower at one end which abuts against an eccentric cam provided to move said arm thereby moving said pressing roller into and out of engagement with said fixing roller, a cam shaft of said eccentric cam being rotated by a drive source; said apparatus comprising:



spring clutch means for transmitting drive power from said drive source to said cam shaft only when said clutch means is engaged;

means for periodically engaging said clutch means; and

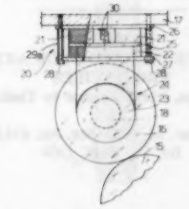
a one-way clutch coupled between said cam shaft and said drive source for maintaining the rotational speed of said cam shaft equal to the rotational speed imparted to said cam shaft by said drive source.

4,464,986

DEVICE FOR REDUCING THE VIBRATION OF A PRESS SECTION CONSTITUTED BY TWO OR MORE ROLLS PRESSED ONE AGAINST THE OTHER IN A PAPER MANUFACTURING MACHINE

Umberto F. Bollani, Turin, Italy, assignor to Beloit Corporation, Beloit, Wis.

Filed Jul. 26, 1982, Ser. No. 401,738
Claims priority, application Italy, Jul. 31, 1981, 68079 A/81
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—163 R **4 Claims**



1. A mechanism for a press section of a papermaking machine comprising in combination:

first and second press rolls forming a pressure loaded press nip therebetween for receiving a traveling web moving in a machine direction;

a support frame for the rolls;

bearings for said rolls including end bearings for the first roll;

a support carrying said end bearings on the frame including a first layer of deformable elastic material between the end bearings and the frame and positioned to deform with movements of the first roll in a first direction toward the frame at right angles to the axis of the roll;

including a second layer of deformable elastic material located between said end bearings and the frame and positioned to deform with movement of the first roll in the second direction opposite the first direction away from the frame;

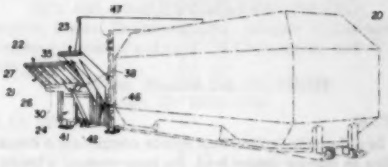
and said connection including a pair of parallel tongues having sliding engaging surfaces extending parallel to said first and second directions and accommodating movement of the end bearings in said first and second directions, said surfaces being nonmovable toward each other in the machine direction.

4,464,987

REFUSE COMPACTING AND TRANSPORTING SYSTEM

Richard J. Heinrich, Rte. 3, Box 452, Staunton, Va. 24401

Filed Sep. 29, 1983, Ser. No. 537,034
Int. Cl.³ B30B *15/30*
U.S. Cl. 100—215 **7 Claims**



1. A refuse compacting and transporting system comprising a receiving, dumping and compacting apparatus added to be releasably coupled to a large capacity refuse transporting container, said apparatus comprising a horizontal axis ram compacting unit forming a base for the apparatus and having releasable means for coupling the apparatus to a large capacity refuse transporting container, a hopper bin mounted on a forward portion of said compacting unit and being in communication through its bottom therewith and having an open rear end and sloping upwardly divergent side walls, a dumping pin above the rear portion of the compacting unit and extending rearwardly of the hopper bin and having a forward open end and sloping upwardly divergent side walls which are parallel to the side walls of the hopper bin when the dumping pin in a substantially level position resting on the compacting unit, a transverse axis yoke hinge for the dumping bin on the compacting unit substantially at the top of the compacting unit and spaced a substantial distance forwardly of the rear open end of the hopper bin, whereby the side walls of the dumping bin and hopper bin may have scissoring action with the dumping bin entering between the hopper bin side walls when the dumping bin is elevated to a dumping position, power means coupled between the dumping bin and compacting unit to raise and lower the dumping bin around its pivot axis, a depending refuse pusher plate on the bottom and forward end of the dumping bin transversely thereof having an arcuate path of movement around the pivot axis of the dumping bin in spaced relationship to the pivot axis, the side walls of the dumping bin and hopper bin being in non-parallel gapped relationship when the dumping bin is in an elevated dumping position, and refuse deflector plates hinged to the side walls of the dumping bin at the forward end of the dumping bin and having edges which remain wipingly engaged with the side walls of the hopper bin throughout dumping movement of the dumping bin relative to the hopper bin.

4,464,988

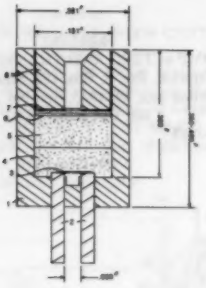
Patent Not Issued For This Number

4,464,989

INTEGRAL LOW-ENERGY THERMITE IGNITER

Albert Gibson, Dayton; Lowell D. Haws, Springboro, and Jonathan H. Mohler, Spring Valley, all of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 13, 1983, Ser. No. 494,487
Int. Cl.³ F42C 19/12
U.S. Cl. 102—202 12 Claims



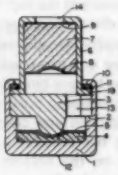
1. In a thermite igniter/heat source comprising a container holding an internal igniter load, the improvement wherein the container consists essentially of consumable consolidated thermite having a low gas output upon combustion, whereby upon ignition, substantially all of the container and said load is consumed with low gas production.

4,464,990

IGNITION DEVICE WITH AMPLIFIER CHARGE

Hellmut Bendler, and Gerrit Scheiderer, both of Furth, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,788
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032712
Int. Cl.³ F42B 3/00
U.S. Cl. 102—204 17 Claims



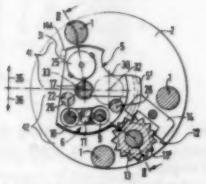
1. An impact sensitive ignition device comprising a housing having a closed bottom member and a side wall secured thereto, the side wall having a shoulder along the inner periphery thereof, an igniter disposed within the housing along the closed bottom member, an anvil positioned in the housing for cooperation with the igniter, the anvil having at least one aperture therethrough and being supported on the shoulder of the side wall of the housing, a sleeve member disposed above the anvil and having an open end proximate to the anvil, the open end of the sleeve member having a flange thereat, the sleeve member being coupled to the housing at the flange thereof, and an amplifier charge disposed in the sleeve member.

4,464,991

SAFETY DEVICE FOR FUSES OF SPINNING PROJECTILES

Hans Kaiser, Konigsfeld, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Feb. 4, 1982, Ser. No. 345,761
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107110
Int. Cl.³ F42C 15/22
U.S. Cl. 102—233 8 Claims



8. A method of assuring safe operation of a fuse for spinning-type projectiles, comprising the steps of:

arranging a detonator carrier for rotation about an axis such that the carrier can bring a detonator carried thereby to an active position for detonation in a first direction of rotation, but not in the opposite direction of rotation,

releasably restraining said carrier by the elements of a releasable safety assembly which prevents rotation of said carrier in said first direction until firing of the projectile occurs, at which time said carrier is released for rotation in said first direction under the inducement of projectile motion, and

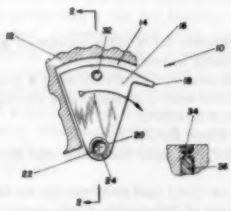
arranging said safety assembly such that when the elements thereof are properly installed, a center of gravity of said carrier is located to induce rotation of said carrier in said first direction whereas when one of the elements is missing, the center of gravity is located to induce rotation of said carrier in said opposite direction of rotation.

4,464,992

SECTOR TYPE INITIATOR FOR ARTILLERY PROJECTILES

Frank H. Bell, Logan, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Mar. 14, 1983, Ser. No. 474,851
Int. Cl.³ F42C 1/04
U.S. Cl. 102—275 3 Claims



1. An initiator for a spinning projectile having a spin axis or center-line,

a body having a cavity therein,

a firing pin,

a flat sector shaped mass in said cavity, said sector shaped mass comprising in outline part of a circle bounded by two radii and the arc portion included between them and being pivoted for rotation near the junction of said radii orthogonal to the center-line of the projectile in which said

initiator is installed, said firing pin being integral with said sector shaped mass and formed as an extension of the arc portion thereof,

a wall of said cavity providing a stop surface for preventing relative rotation of said sector shaped mass and said body in a first direction,

a shear pin preventing relative rotation of said sector shaped mass and said body in a second direction, and

a percussion primer supported by said body and positioned in the plane of rotation of said sector shaped mass and said firing pin,

whereby upon launch of and rotation of the projectile in the said second direction on the center-line thereof there is no resulting relative rotation of said sector shaped mass and said body and said initiator remains unarmed, and upon impact of said projectile with a resistant media and resulting rapid decrease in the rate of rotation thereof, said sector shaped mass is caused, due to the force of inertia developed therein, to shear said shear pin and to bring said firing pin into sharp contact with said percussion primer.

4,464,993

PROCESS FOR USE IN BLASTING IN SITU RETORTS AND THE LIKE

Darrell D. Porter, Englewood, Colo., assignor to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Jun. 30, 1982, Ser. No. 393,664
Int. Cl.³ F42D *1/04*
U.S. Cl. 102—312 **11 Claims**

1. A process for use in forming an upright, modified in situ, oil shale retort, comprising the steps of:

(a) excavating a generally horizontal mine in a subterranean formation of oil shale at a depth which is to generally coincide with the bottom of the retort;

(b) drilling a substantially vertical blast hole in said subterranean formation of oil shale at a sufficient depth to communicate with said mine;

(c) providing an open-ended tubular canister having a diameter slightly smaller than said blast hole;

(d) casting a concrete disc about a drainpipe so that said drainpipe extends through said disc and upwardly above said disc, said concrete disc being cast with a diameter slightly smaller than said canister;

(e) placing an expandable bag in said canister upon said disc, pouring a cementatious slurry into said bag, and substantially supporting said bag of cementatious slurry with said disc;

(f) lowering said canister containing said bag of cementatious slurry on said disc, to a desired depth in said blast hole;

(g) expanding said bag of cementatious slurry against the walls of said blast hole by dropping said disc and said bag to a preselected distance below said canister, so that the level of cementatious slurry in said bag falls below the top of said drainpipe;

(h) allowing said cementatious slurry in said bag to generally conform to and set against said walls of said blast hole in said subterranean formation of oil shale to form a concrete plug substantially across said blast hole, with said drainpipe extending upwardly through said plug for permitting drainage of water through said plug;

(i) setting an explosive charge on said concrete plug;

(j) detonating said explosive charge to blast and explosively rubblize said oil shale into said mine to form at least part of a generally upright, modified in situ retort; and

(k) repeating steps (d) through (j) at progressively higher levels in said blast hole until the entire retort is explosively formed and the said oil shale in said retort is rubblized.

4,464,994

APPARATUS FOR PLUGGING A BLAST HOLE IN AN IN SITU OIL SHALE RETORT OR THE LIKE

Darrell D. Porter, Englewood, Colo., assignor to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Jun. 30, 1982, Ser. No. 393,719
Int. Cl.³ F42D *7/00*
U.S. Cl. 102—333 **18 Claims**

1. An apparatus for use in plugging a blast hole, comprising:

a cementatious slurry comprising spent oil shale;

expandable bag means for containing said cementatious slurry of spent oil shale, said bag means being movable from a retracted storage position to an expanded engagement position;

tube means for containing said bag means in said retracted position;

bag support means for supporting said bag means;

a first line connected to said bag support means for holding said bag means in said retracted storage position;

a second line substantially longer than said first line and connected to said bag support means for holding said bag means generally below said tube means in said expanded engagement position to permit said bag means containing said cementatious slurry of spent oil shale to engage and harden against the walls of said blast hole;

sequencer means including a vertically positioned rotatable indexing wheel located above said tube means, said vertically positioned rotatable indexing wheel having outwardly extending fingers for sequentially holding and releasing said first and second lines; and

electrically conductive cable means for lowering, raising, and energizing said sequencer means in said blast hole.

4,464,995

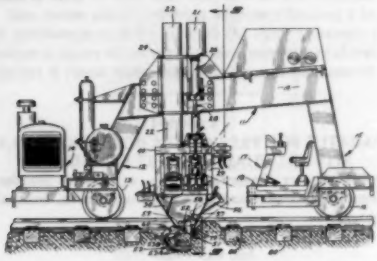
METHOD AND APPARATUS FOR REMOVING RAILWAY TIES

Frank J. Nameny, Minnetonka, Minn., assignor to Loram Maintenance of Way, Inc., Hamel, Minn.

Continuation-in-part of Ser. No. 13,983, Feb. 22, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 277,835

Int. Cl.³ E01B *29/06*

U.S. Cl. 104—9 **10 Claims**



1. Apparatus for removing railway ties from a track system comprising in combination;

a vertically reciprocal work head of substantial mass and including a downwardly depending surface to be placed on the top surface of a tie to be removed and downwardly depending means adapted to engage the tie to prevent lateral motion thereof; and

means, including spaced apart ripper teeth operable between a retracted position above and on the side of said tie and an immersed position underneath said tie, operable to displace ballast material laterally of said tie.

4,464,996

CONVEYOR APPARATUS

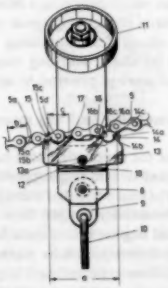
Gustav G. Veith, Laiming, Fed. Rep. of Germany, assignor to Gustav Georg Veith GmbH & Co., KG, Frasdorf, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,762

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110833

Int. Cl.³ B61B *10/02*

U.S. Cl. 104—172 S **5 Claims**



1. In conveyor apparatus comprising a plurality of carrier units, a rail on which said carrier units are supported for movement and along which they are guided, and a driven endless chain having a straight stretch parallel and adjacent to a straight section of said rail, said chain having at least certain links that are substantially identical and each of which has a transverse opening therethrough and has a laterally extending driving portion at one end of said opening, the driving portions of those links being spaced along the chain at uniform pitch distances, coupling means on each carrier unit for drivingly connecting it with said straight stretch of the chain, said coupling means comprising:

A. an elongated tiltable member having a pair of protuberances which project in one direction transverse to the length of the tiltable member,

(1) each of said protuberances having thereon

(a) a bearing surface which faces substantially in said one direction and

(b) a pair of other surfaces

(i) which face in opposite directions lengthwise of the tiltable member and

(ii) which are so spaced apart that the protuberance is receivable in said opening in one of said links with one of said other surfaces drivingly engaging the driving portion of that link, and

(2) said protuberances being spaced apart by a distance so related to said pitch distances that when one of said protuberances is received in said opening in one of said links, the bearing surface on the other protuberance is engaged against the driving portion of another of said links; and

B. a pivotal connection between said tiltable member and the carrier unit whereby said tiltable member is confined to rocking relative to the carrier unit about an axis

(1) which is midway between said protuberances and

(2) which extends transversely to the length of the tiltable member and to said one direction,

said pivotal connection so disposing the tiltable member on the carrier unit that when the latter is on said straight section of the rail, said protuberances are engaged as aforesaid with links of said straight stretch of the chain.

4,464,997

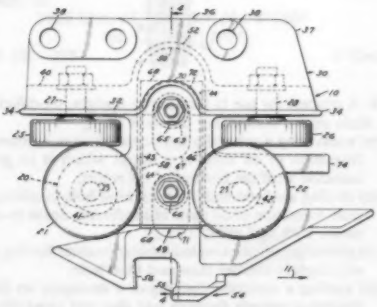
CONVEYOR TROLLEY AND TRACK

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 340,112, Jan. 18, 1982, abandoned. This application Jul. 26, 1982, Ser. No. 401,924

Int. Cl.³ B61B *10/00, 13/12*; **B61F** *9/00*

U.S. Cl. 104—172 S **13 Claims**



1. In a conveyor trolley including a body, longitudinally separated pairs of transversely spaced supporting wheels and a pair of longitudinally spaced guide rollers rotatably mounted on the body, and a shield member formed on the body disposed outwardly of and adjacent to the guide rollers, the shield member extending perpendicular to the axes of the guide rollers and having portions which project longitudinally and transversely outwardly of the peripheries of the guide rollers; the improvement wherein:

the trolley body is formed with a socket located longitudinally between the pairs of wheels and centered transversely of the trolley body, the socket extending substantially parallel to the axes of the guide rollers and having an open end and an opposite end closed by the shield member;

a driving dog having a stem portion extending inwardly of the socket from the open end thereof;

and means supporting the stem portion in the socket for movement therein between extended and retracted positions of the driving dog relative to the trolley body.

10. In a conveyor comprising a track formed by a pair of longitudinally extending track members having a pair of transversely spaced supporting surfaces; and a trolley having a body, longitudinally spaced pairs of wheels rotatably mounted on the body and adapted to engage the supporting track surfaces, and a driving dog carried by the body for movement between extended and retracted positions relative thereto; the improvement wherein:

the trolley body is provided with an integrally formed socket located longitudinally between the axes of the pairs of wheels and centered transversely of the trolley body, the socket extending substantially parallel to the axes of the guide rollers and having an open end and an opposite closed end;

the driving dog is formed with a stem portion extending inwardly of the socket from the open end thereof;

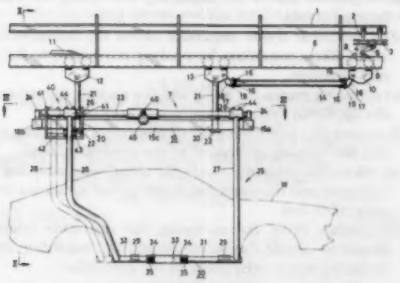
and means supporting the stem portion of the driving dog for movement lengthwise of the socket, the supporting means being carried by the trolley body and comprising wear plates spaced apart transversely of the socket and slidably engageable by the stem portion, and a plurality of rollers engageable by the stem portion, the rollers being mounted between the wear plates on axle members extending transversely of the socket and spaced apart lengthwise thereof.

4,464,998

HANGER DEVICE FOR TROLLEY CONVEYOR

Takao Wakabayashi, Toyonaka, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Mar. 25, 1982, Ser. No. 361,628
Int. Cl.³ B61B *10/02*
U.S. Cl. 105—148 **5 Claims**



1. A hanger device for a trolley conveyor including a carrier comprising:

a pair of opposed hanger arms approximately U-shaped when seen sideways, said hanger arms being openably suspended from said carrier for loading or unloading an article;

each of said hanger arms including a front hanging member, a rear hanging member, and an extensible horizontal member connected at its opposite ends to the lower ends of said hanging members, said extensible horizontal members being positioned in and extensible in the same plane;

means for adjusting the relative positions of said front and rear hanging members on said carrier longitudinally of said hanger device;

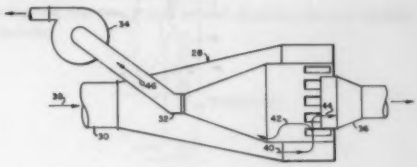
said horizontal member being provided with article support members attached to its front and rear portions and projecting inwardly therefrom.

4,464,999

DIRECT PULVERIZED FUEL FIRED SYSTEM

Richard L. Musto, Homewood, Ill., and Norichika Kai, San Paulo, Brazil, assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 18, 1982, Ser. No. 442,558
Int. Cl.³ F23K *1/00*
U.S. Cl. 110—106 **2 Claims**



1. In a direct fired system operative for purposes of effecting the pulverization and subsequent firing of solid fuels, said direct fired system including pulverizer means for pulverizing solid fuel material, classifier means for rejecting pulverized solid fuel particles that exceed preset specifications for fineness and for returning the rejected oversize particles to the pulverizer means for further pulverization, burner means for firing therewithin properly sized solid fuel particles, and means establishing a fluid flow path for a stream of hot gases and for the pulverized solid fuel particles from the pulverizer means to the classifier means and from the classifier means to the burner means, the improvement comprising classifier means consisting of a double cone classifier including a tailings spout, recirculation means connected at one end in fluid flow relation to said tailings spout and connected at the other end to the pulverizer means, said recirculation means including a material handling fan supported in mounted relation along the length of said recirculation means intermediate the ends thereof, said material handling fan being operative to recirculate from said tailings spout directly back to the pulverizer means a portion of the stream of hot gases that enters said double cone classifier and that upon exiting from said tailings spout of said double cone classifier has entrained therein the rejected oversize particles, said material handling fan thereby effectuating the return of the rejected oversize particles to the pulverizer means for further pulverization therewithin while concomitantly preventing the circulation from said double cone classifier to the burner means of the entire stream of hot gases that enters said double cone classifier so as to improve the combustion ratio of solid fuel particles to hot gases at the burner means.

4,465,000

METHOD OF INCREASING THE EFFICIENCY OF CYCLONE-FIRED BOILERS USING HIGH SODIUM LIGNITE FUEL

Elwyn Shimoda, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

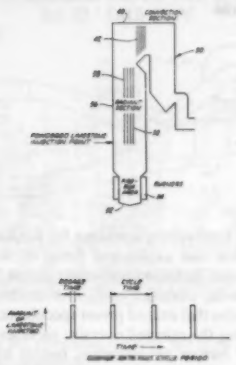
Continuation of Ser. No. 346,795, Feb. 8, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,600
Int. Cl.³ F23D *1/00*; F23G *7/00*
U.S. Cl. 110—343 **3 Claims**

2. A method of increasing the efficiency of a cyclone-fired boiler using high sodium lignite fuel which produces ash deposits containing sodium sulfate and calcium sulfate on convective heat transfer surfaces within said boiler comprising the steps of:

(a) cyclically injecting, separately from the supply of said fuel to said boiler, time-spaced doses of powdered calcium carbonate into the firebox of said boiler above the flames

of burning sodium lignite fuel therein in a quantity and at a location such that said calcium carbonate is heated to a temperature in the range of from about 2200° F. to about 2700° F. and maintained in said temperature range for a time period less than the time at which calcium carbonate becomes unreactive;

(b) contacting ash deposits on said heat transfer surfaces, which have formed from operation between said doses, with said calcium carbonate which is in said temperature range, whereby said calcium carbonate and ash deposits



react to form a layer which is more friable than said ash deposits and which has an ash fusion temperature higher than that of said ash deposits; and

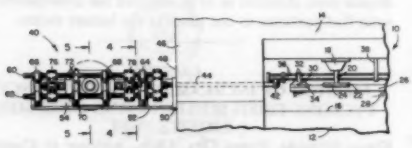
(c) periodically removing said deposits from said heat transfer surfaces; wherein said doses are injected at a location such that the powdered calcium carbonate is maintained in said temperature range for about two seconds prior to contacting ash deposits on said heat transfer surfaces and each dose of calcium carbonate is injected for a period of ten seconds, and the time interval between doses is thirty minutes.

4,465,001

TUFTING MACHINE NEEDLE BAR SHIFTING APPARATUS

Gary L. Ingram, Ooletwah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Mar. 30, 1983, Ser. No. 480,244
Int. Cl.³ D05C *15/26*
U.S. Cl. 112—79 A **20 Claims**



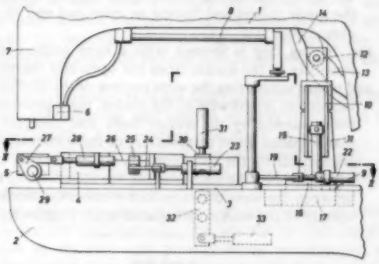
1. In combination with a tufting machine having a needle bar reciprocable vertically relative to a base material fed through said machine and mounted for lateral movement relative to the base material, and drive means connected to said needle bar for shifting the needle bar laterally, apparatus for laterally moving said drive means in accordance with a pattern, said apparatus comprising, a plate cam having pattern information on a peripheral surface thereof, means including a shaft for rotating said cam in timed relationship with the reciprocation of said needle bar, a pair of spaced rods, means for journally mounting said rods for slidable movement laterally, said shaft being disposed intermediate said rods and extending substantially normal to a plane passing through said rods and terminating at a free end spaced from said plane, said cam being disposed in a second plane intermediate the rods and said free end, locking means intermediate said free end and said cam for drivingly connecting said cam to said shaft, whereby said cam may be removed axially from said shaft upon release of said locking means, a pair of followers, follower mounting means for mounting said followers in engagement with said peripheral surface of said cam at substantially diametrically opposed dispositions across said cam, means for fastening said follower mounting means to both of said rods for driving said rods laterally as determined by said cam, and means for connecting said rods to said drive means.

4,465,002

BUTTON SEWING MACHINE

Johannes Sahl, Tannenweg 17, A-4501 Neuhofen/Krems, Austria

Filed Dec. 14, 1981, Ser. No. 330,318
Int. Cl.³ D05B *3/14*
U.S. Cl. 112—111 **8 Claims**



1. A button-sewing machine having a base and comprising

(a) a base plate displaceable in the base in a first direction,

(b) a button-holding clamp displaceable in a second direction transverse to the first direction and tiltable about an axis extending in the second direction,

(c) respective drives for displacing and tilting the button-holding clamp,

(d) a needlebar frame suspended above the button-holding clamp like a pendulum for rocking movement in the second direction,

(e) actuating means for imparting the rocking movement to the needlebar frame,

(f) a controller controlling the displacement of the base plate and the rocking movement of the needlebar frame,

(g) releasable coupling means for selectively coupling the baseplate and the needlebar frame actuating means to the controller, and

(h) another drive for operating the releasable coupling means to couple the baseplate and the needlebar frame actuating means selectively to the controller.

4,465,003

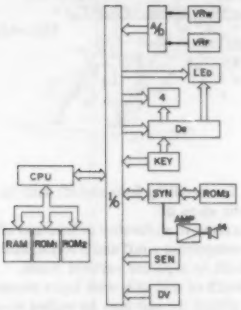
ELECTRONIC SEWING MACHINE WITH VOCAL INSTRUMENTALITIES

Hachiro Makabe, Kanagawa, and Takeshi Kongoh, Tokyo, both of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 489,612, May 3, 1983, abandoned. This application Dec. 5, 1983, Ser. No. 558,384
Claims priority, application Japan, May 6, 1982, 57-74623
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **7 Claims**

1. An electronic sewing machine comprising pattern selecting means including a plurality of pattern selecting switches each operated to select a pattern to be stitched; indicating

means including a plurality of lamps each selectively lighted to indicate a pattern selected by a pattern selecting switch; stitch forming means for producing a selected pattern of stitches including a needle vertically and laterally reciprocated to penetrate a fabric to be stitched and a fabric feeding device for transporting the fabric relative to the needle; operating means for the functions of the sewing machine including a first operating element operated to adjust a lateral swinging movement of the needle and a second operating element operated to adjust a fabric feeding amount; a central processing unit having memory means memorizing logic signals for selectively effectuating the function operating means of the sewing machine under a control of a predetermined program; voice address



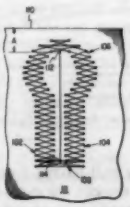
generating means for cooperating with the central processing unit, said voice address generating means being provided with the logic circuits of voice address codes for generating the instructions of voice with respect to the manipulations of the operating means and the results thereof in a predetermined order; memory storing voice parameters which are to be read out when addressed by the voice address generating means; voice synthesizing means for synthesizing the voice parameters read out from the memory to thereby generate voice wave signals; speaker means receiving the voice wave signals to announce the instructions of voice with respect to the manipulation of the operating means and the results thereof in a predetermined order.

4,465,004

METHOD OF FORMING AN EYELET END BUTTONHOLE PATTERN

John W. Wurst, Chester Township, Morris County, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 4, 1982, Ser. No. 432,483
Int. Cl.³ D05B *3/06*
U.S. Cl. 112—264.1 **4 Claims**



1. A method of operating a zig zag sewing machine to produce an eyelet end buttonhole pattern on a work material, said eyelet end buttonhole pattern including two spaced apart parallel rows of zig zag stitches joined at one end by a generally circular pattern of zig zag stitches, said method comprising the steps of:

sewing a first of said parallel rows in a first direction towards said one end;

sewing said generally circular pattern starting at said one end of said first row;

sewing the second of said parallel rows in a second direction away from said one end;

sewing said second row in said first direction towards said one end;

sewing said generally circular pattern starting at said one end of said second row; and

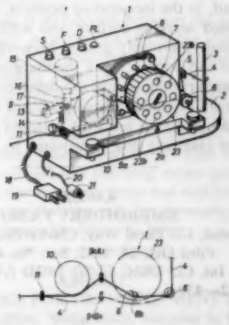
sewing said first row in said second direction away from said one end.

4,465,005

APPARATUS FOR DYEING SEWING MACHINE UPPER THREADS

Yasukata Eguchi; Susumu Hanyu, both of Tokyo, and Chuji Nagasaka, Otsuki, all of Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Dec. 22, 1982, Ser. No. 452,240
Claims priority, application Japan, Dec. 22, 1981, 56-206220
Int. Cl.³ D05B *67/00*
U.S. Cl. 112—270 **7 Claims**



1. Apparatus used in combination with a sewing machine for dyeing a sewing machine upper thread, comprising:

a housing;

a container rotatably mounted on said housing and containing a plurality of coloring members, each coloring member containing a different color liquid;

means for selecting one of said coloring members, said selecting means including an operating dial and actuating member, said operating dial being rotatable and axially movable to select one of said coloring members, and said actuating member being moved in association with the axial movement of said operating dial to move the selected one of said coloring members from an ineffective position to an effective position in which the coloring member thus selected is adapted to apply the color liquid to a thread guided into the apparatus; and

means for heat-setting the color liquid applied to the thread, said thread being adapted to be guided out of the apparatus to a needle of the sewing machine.

4,465,006

THREAD GRIPPER AND CUTTING DEVICE FOR A SEWING MACHINE

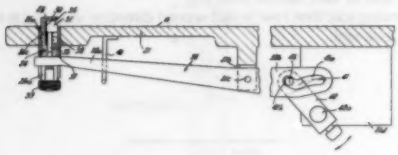
Erast Dreier, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

Filed Dec. 30, 1982, Ser. No. 454,620

Claims priority, application Switzerland, Jan. 19, 1982, 305/82; Jul. 5, 1982, 4083/82

Int. Cl.³ D05B *65/00*

U.S. Cl. 112—292 **12 Claims**



1. A thread gripper and cutting device for a sewing machine containing a cover plate provided with a working surface comprising,

two resiliently cooperating clamping disks and a cutting means with a cutting blade arranged at an angle with respect to the clamping plane of said disks,

a retaining bush disposed at a spacing from the needle penetration point in a recess of the working surface of the machine and being secured against rotation, the inner shank portion of the bush being integrally connected, via an axially parallel marginal web containing the cutting blade, with an end portion constituting the outer clamping disk and projecting, in the operative position, at least in part and, in the inoperative position, at most in part, beyond said working surface, and with an inner clamping disk axially, movably guided between the shank portion and the end portion along the marginal web, and

spring means resting against the shank portion for urging the outwardly oriented clamping surface of the inner clamping disk against the inwardly oriented clamping surface of the first clamping disk constituted by the end portion.

4,465,007

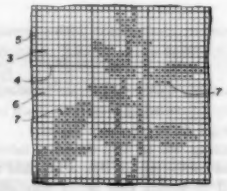
EMBROIDERY FABRIC

Louise Strobel, 120 Coral Way, Clarksville, Ind. 47130

Filed Oct. 28, 1982, Ser. No. 437,315

Int. Cl.³ D05C *17/00*; D03D *1/00, 9/00*

U.S. Cl. 112—439 **1 Claim**



1. In an embroidery fabric having loosely, even woven relatively thick threads, the improvement comprising, vertically and horizontally extending relatively thin guide threads woven into said fabric in such a manner to correspond to the heavier lines on a conventional embroidery paper pattern, to thereby form a grid of blocks containing a predetermined number of open squares in the fabric, said guide threads being of a different color from the threads of said fabric and being removable from the fabric upon completion of the embroidery work, thereby removing any trace of the grid blocks from the fabric.

4,465,008

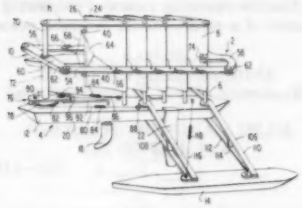
SAILCRAFT

John A. Liggett, P.O. Box 2031, Stuart, Fla. 33495

Filed May 24, 1982, Ser. No. 381,036

Int. Cl.³ B63H *9/06*

U.S. Cl. 114—39 **16 Claims**



12. The method for handling fore and aft sails on a sailcraft which comprises the steps of:

providing a sailcraft with a plurality of fore and aft rectangular sails each comprising a luff and a leech, said sails being bent at their luffs to separate vertical masts,

providing each leech of said sails with leech means including sail sheets by which the sail may be pulled away from its mast uniformly along its fore and aft length while its leech remains substantially parallel to its mast,

simultaneously applying substantially equal tension to each sail leech via said sail sheets with substantially the same longitudinal and transverse vectors continuously whether such tension is increased or decreased and whether the sails be on a port or starboard tack, and

simultaneously and equally changing said sail leech tension on all sails from time to time as the sailcraft is driven forward by the force of wind upon the sails.

4,465,009

VEE TYPE PLANING HULL FOR SMALL POWER BOATS

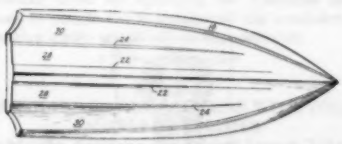
Forrest L. Wood, Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, Bull Shoals, and Gary L. Wilson, Flippin, all of Ark., assignors to Wood Manufacturing Co., Flippin, Ark.

Filed Jul. 20, 1981, Ser. No. 285,032

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ B63B *1/04*

U.S. Cl. 114—56 **3 Claims**



1. A deep vee entry hull having a central running surface extending fore and aft thereof, the cross section thereof transitioning from a pronounced vee to a nearly planar configuration from fore to aft, said central running surface being flanked, in the after portion of the hull, by intermediate and outboard running surfaces; said intermediate running surfaces being planar and exhibiting, with said central running surface a vee configuration in cross section; and said outboard running surfaces exhibiting a cross section of uninterrupted concave cur-

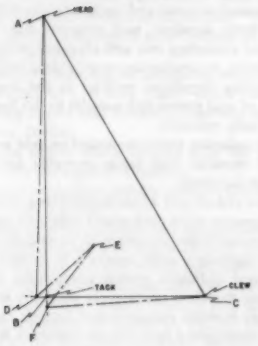
vature commencing amidship to the extreme aft exit end thereof; the hull including side walls and the curvature of said concave outboard running surfaces, at any given fore and aft position, is constant up to and including an outer lip merging the same with the hull side walls; said outboard running surfaces being planar in the forward portion of the hull and transitioning to said concave configuration amidship; and the depth of said concave configuration gradually increasing from amidship to stern.

4,465,010

SAIL AND METHOD OF CONSTRUCTION

Domina C. Jalbert, 170 NW. 20th St., Boca Raton, Fla. 33432

Filed Apr. 9, 1982, Ser. No. 367,141
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—103 **4 Claims**



1. A method of forming a sail from sail material, said sail having a luff with a desired luff measurement (B-A), a foot with a desired foot measurement (B-C), and a desired angle at a tack (B), with a built-in-pocket;

(1) placing the luff measurement (B-A) including an upper end (A) and a lower end (B) and the foot measurement (B-C) including a first end (C) and a second end (B) on the sail material with the desired angle therebetween;

(2) selecting a point (E) in the sail material for placing the center of the built-in-pocket;

(3) pivoting the luff measurement (B-A) about the upper end (A), moving the lower end (B) forwardly away from the selected point (E) a predetermined distance to a first new point (D) on the sail material, said predetermined distance having been selected to obtain the desired depth of the built-in-pocket;

(4) forming the luff in the sail material between the upper end (A) of the luff measurement (B-A) and the first new point (D);

(5) forming a first edge (D-E) in the sail material from the first new point (D) of the luff of the sail material to the selected point (E) in the sail material;

(6) pivoting the foot measurement (B-C) about the first end (C), moving the second end (B) downwardly away from the selected point (E) a predetermined distance to a second new point (F) on the sail material, said predetermined distance having been selected to obtain the desired depth of the built-in-pocket;

(7) forming the foot in the sail material between the first end (C) of the foot measurement (B-C) and the second new point (F);

(8) forming a second edge (F-E) in the sail material from the second new point (F) of the foot of the sail material to the selected point (E) in the sail material;

(9) forming a desired leech in the sail material between the upper end (A) of the luff and the first end (C) of the foot; and

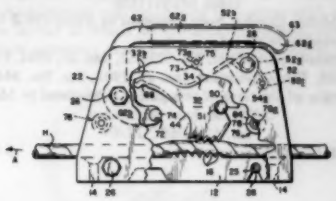
(10) fixing the first edge (D-E) in the sail material to the second edge (F-E) in the sail material to form the tack having the desired luff and foot measurements, the desired angle, and the built-in-pocket.

4,465,011

HALYARD STOPPER

Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Jul. 19, 1982, Ser. No. 399,212
Int. Cl.³ B63B *21/08*
U.S. Cl. 114—199 **13 Claims**



1. A line stopper having an entrance end and an exit end, said stopper comprising

A. a base;

B. a pair of spaced-apart side members extending generally perpendicular to the base;

C. line jamming means in the form of a class two lever pivoted at its fulcrum between the side members above the base near the entrance end of the stopper;

D. a lever movably mounted to said side members above the base near the exit end of said stopper for applying a force directed away from the base to a part of said line jamming means, said lever

1. being pivoted at its fulcrum between the side members above the base near the exit end of the stopper;
2. having its short leg extending from its said fulcrum to said line jamming means part; and
3. having its long leg extending from its said fulcrum to an accessible location adjacent an edge of the stopper;

E. line gripping teeth or serrations formed on a surface of said line jamming means opposite the base and between said fulcrum and said line jamming means part; and

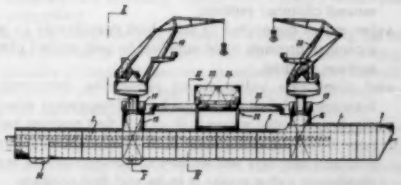
F. means on said line jamming means and said lever short leg for releasably maintaining said line jamming means surface spaced appreciably from the base.

4,465,012

FLOATING DEVICE FOR TRANSSHIPMENT OF CARGO

Robert W. Bos, Leiden, Netherlands, assignor to Gusto Engineering B.V., Schiedam, Netherlands

Filed Feb. 9, 1982, Ser. No. 347,445
Claims priority, application Netherlands, Feb. 9, 1981, 8100610
Int. Cl.³ B65G *67/62*
U.S. Cl. 114—266 **1 Claim**



1. In a floating device for transshipment of cargo from one ship to another ship, said device comprising two parallel pontoons which are interconnected by a bow, there being a space

between said pontoons for the mooring of ships, said device having cargo handling means; the improvement in which said two pontoons have a freeboard which is lower than the bow, on each pontoon at least one buoyant column which extends upwardly higher than the upper deck of the pontoons and higher than the upper deck of the bow, and a horizontal bridge carried by the upper ends of the buoyant columns that bridges across said space and that is higher than the upper deck of the bow, said cargo handling means being carried by the bridge.

4,465,013

TIRE MONITOR

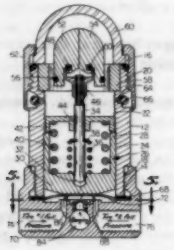
Jerry P. Malec, Omaha, Nebr., assignor to Allied Oil & Supply, Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 228,253, Jan. 26, 1981, Pat. No. 4,375,788. This application Jan. 29, 1982, Ser. No. 344,211

The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.

Int. Cl.³ B60C *23/04*

U.S. Cl. 116—34 R **3 Claims**



1. A tire monitor for use with a pair of pneumatic tires, comprising,

an elongated, generally cylindrical body member having first and second ends, said body member having a first chamber formed therein,

a diaphragm valve means mounted in said first chamber between said first and second ends to define first and second chamber portions, said diaphragm valve means being transversely disposed with respect to the longitudinal axis of said body member,

a spring means, having first and second ends, in said first chamber portion at one side of said diaphragm valve means yieldably urging said diaphragm valve means towards said first end,

said diaphragm valve means movable between first and second positions,

a valve cap means secured to said first end of said body member and having a first air passageway formed therein in communication with the interior of one of said tires, a second air passageway formed therein in communication with the interior of the other of said tires, and a third air passageway formed therein in communication with said second chamber portion,

valve means connected to said third passageway to permit air under pressure to be supplied to said second chamber portion at times,

said diaphragm valve means preventing communication between said first and second air passageways when said diaphragm valve means is in its said first position and also preventing communication between said third air passageway and said first and second air passageways when said diaphragm valve means is in its said first position,

said diaphragm valve means allowing communication between said first and second air passageways when said diaphragm valve means is in its said second position and also allowing communication between said third air passageway and said first and second air passageways when said diaphragm valve means is in its said second position,

said spring means yieldably urging said diaphragm valve means towards its said first position with the air pressure in said first and second air passageways urging said diaphragm valve means towards its said second popsition,

a piston slidably mounted in said first chamber portion adjacent said diaphragm valve means, said piston having a head portion adjacent said diaphragm valve means and a cylindrical skirt portion extending therefrom which defines a chamber portion in the other end of said piston, said piston being movable in a longitudinal direction parallel to the longitudinal axis of said body member,

one end of said spring means being received by said chamber portion in said piston and being in engagement with said pistion for yieldably urging said diaphragm valve means towards its said first position,

an elongated actuator rod longitudinally slidably mounted in said body member, said actuator rod having one end thereof extending into said chamber portion of said piston and being in contiguous engagement with said piston and extending therefrom parallel to the longitudinal movement of said piston and parallel to the longitudinal axis of said body member,

a visual indicator means mounted on said second end of said body member and being movable between open and closed positions,

the other end of said actuator rod being in direct contiguous engagement with said visual indicator means for moving said visual indicator means to its said open position when said diaphragm valve means is in its said first position,

said visual indicator means comprising first and second arcuate members operatively pivotally secured together,

a resilient member engaging said arcuate members for yieldably maintaining said arcuate members in their open position,

the engagement of said actuator rod with said visual indicator means, when said diaphragm valve means is in its said second position, causing said arcuate members to move to their closed position,

said spring means causing said diaphragm valve means to move to its said first position to prevent communication between said first and second air passageways if one of the tires experiences a predetermined loss of pressure.

4,465,014

APPARATUS FOR APPLYING SOLDER TO A PRINTED-CIRCUIT BOARD

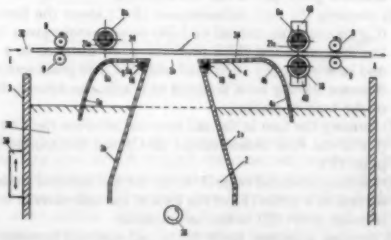
Imre Bajka, Niederglatt, and Robert Furrer, Zurich, both of Switzerland, assignors to Siemens Aktiengesellschaft Berlin & München, Münich, Fed. Rep. of Germany

Filed Oct. 12, 1982, Ser. No. 433,686

Claims priority, application Switzerland, Oct. 22, 1981, 6744/81

Int. Cl.³ B05C *5/02, 3/10*

U.S. Cl. 118—114 **12 Claims**



1. Apparatus for the application of a solder layer to metal-

ized top and bottom surfaces of essentially horizontally advanced circuit boards, comprising:

a supply container for molten solder;

said supply container having an inlet side and an outlet side for the respective entry and exit of through-passing circuit boards to which there is to be applied the solder;

a solder applicator device having a discharge opening and arranged within said supply container and protruding therefrom in the direction of a predetermined feed plane through which travel the circuit boards;

means for delivering the solder out of the supply container into the solder applicator device such that a liquid solder wave is formed at said discharge opening of said solder applicator device;

said solder applicator device containing side walls having upper edges;

said side walls being disposed transversely with respect to the direction of travel of the circuit boards;

metallic guide elements arranged at the region of the upper edges of said side walls;

said guide elements possessing an adjustable angle of inclination with respect to said feed plane which extends at a certain spacing above said discharge opening of said solder applicator device;

the solder of the solder wave flowing over the guide elements back into the supply container;

said solder wave possessing a height which exceeds the feed plane of the circuit board;

both of said guide elements having ends and possessing guide element portions extending at a preselectable distance and at least approximately parallel to said feed plane and defining an intermediate space between said guide elements and said circuit board when passed through said apparatus;

solder limiting elements arranged to extend transversely with respect to the direction of feed of the circuit boards;

said solder limiting elements being arranged at the region of the inlet side and the outlet side at the region of the ends of the metallic guide elements and directly above the feed plane;

said solder limiting elements, during passage of the circuit boards, bearing upon said circuit boards; and

said solder limiting elements serving as limiting means for a solder blanket forming between the inlet side and at the outlet side upon the circuit boards and which solder blanket spreads out upon the upper surface of the circuit boards during through-passage thereof and at least one of which limiting elements also acts as stripper means for stripping solder from the upper surface of the circuit boards; and

said solder wave, after entry of said circuit board, being deformed thereby to continuously flow around and wet all sides of the part of the circuit board which is located between said limiting elements by virtue of solder laterally passing to said top surface of said circuit board and laterally returning past said circuit board and with said solder simultaneously wetting said bottom surface of said circuit board by virtue of solder exiting from said discharge opening and filling said intermediate space defined by said circuit board and said guide elements.

4,465,015

DEVICE FOR SPREADING A SUBSTANCE ONTO A MOVING WEB OF MATERIAL

Francesco Osta, Tenuta Avallano, 1-15039, Ozzano Monferrato, and Giuseppe Cattane, Vorso Manacorda 45, 1-15033, Casale Monferrato, both of Italy

Filed Mar. 21, 1983, Ser. No. 477,734

Claims priority, application Italy, Apr. 5, 1982, 67442 A/82

Int. Cl.³ B05C *1/08, 1/16*

U.S. Cl. 118—222 **14 Claims**

1. In a machine for the treatment of a moving web of material, comprising a support roller supporting said web,

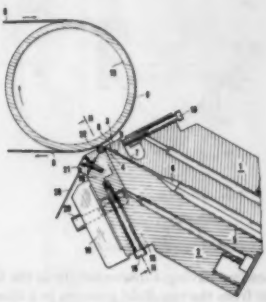
a device for spreading a substance onto said moving web of material, comprising:

an extrusion head arranged near said web opposite said support roller;

in said extrusion head a delivery slit for supplying the substance to be spread, said delivery slit having an outlet facing said web;

in said delivery slit a profiled recess arranged at a predetermined distance from said outlet and extending in parallel relationship with said outlet over the entire width of said extrusion head;

limiting blade segments inserted into said delivery slit in predetermined regions thereof in register with regions of the device in which no spreading is wanted, said limiting blade segments having a thickness corresponding to the



thickness of said delivery slit and a height corresponding to the distance between said profiled recess and said outlet of the delivery slit, and having at the inner end a retaining head whose profile corresponds at least in part to the profile of said recess;

a support member applied to said extrusion head near the outlet of said delivery slit;

and a rotating bar carried by said support member outside said delivery slit near the outlet thereof, said rotating bar contacting said moving web opposite said support roller for spreading thereon the substance delivered by said outlet;

said rotating bar having its outer surface contacting in operative relationship said web only in register with those regions of the delivery slit which are free from limiting blade segments.

4,465,016

METERING DEVICE FOR LIQUID TREATMENTS

Joseph A. Weber, Arlington, Tex., assignor to Gustafson, Inc., Dallas, Tex.

Filed Sep. 28, 1982, Ser. No. 425,529

Int. Cl.³ B05C *5/00*

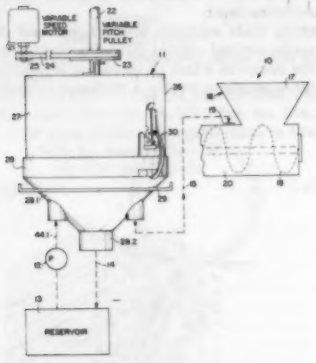
U.S. Cl. 118—303 **19 Claims**

1. Apparatus for metering liquids from a supply under pressure, comprising

a metering rotor revolving about an axis and having flat end faces normal to the rotation axis, the rotor also having a plurality of liquid measuring chambers adjacent the rotor periphery and extending endways entirely through the rotor and opening through both end faces thereof,

first and second stationary headers respectively confronting opposite ends of the rotor and having flat faces lying flush against the end faces of the rotor, the first header having a supply manifold groove in the flat face thereof and the second header having a recirculation manifold groove in the face thereof, said grooves being opposite each other and opposite the measuring chambers of the rotor and the grooves extending in a circumferential direction about the

rotation axis and through a sufficient distance as to span a pair of adjacent measuring chambers in the rotor, the first header having an inlet port communicating with the supply groove for connection to the liquid supply, the second header having an overflow port between the recirculation groove and the exterior of the second header for spilling liquid from the header, the liquid continuously purging air from and flushing the measuring chambers and both manifold grooves as the rotor revolves,



one of the headers having a discontinuity in the face thereof and spaced from the manifold grooves in a direction arcuately around the rotation axis, the discontinuity accommodating discharge of the liquid from the measuring chambers as the rotor revolves, and discharge means for collecting the liquid discharged from the measuring chambers.

4,465,017

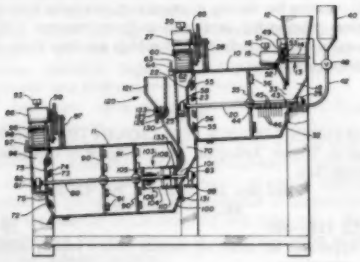
SEED COATING MACHINE

John J. Simmons, 220 Avenue B W., Bismarck, N. Dak. 58501

Filed Mar. 9, 1983, Ser. No. 473,817

Int. Cl.³ B05C *1/02, 3/08, 5/02;* B05D *1/42*

U.S. Cl. 118—418 **7 Claims**



1. An apparatus for coating seeds comprising:

(a) first mixing means for mixing seeds including seed dispensing means;

(b) means for supplying liquid adhesive to seed within said first mixing means, said adhesive supply means including a perforated hollow pipe having a plurality of tines depending therefrom, and being constructed and arranged such that liquid adhesive flows over and around said tines;

(c) means for drying said liquid adhesive coating said seeds within said first mixing means;

(d) second mixing means for receiving and mixing liquid adhesive coated seeds from said first mixing means;

(e) means for supplying one or more substantially dry powders to said second mixing means; and

(f) means for receiving, mixing and sifting said substantially dry powders onto said liquid adhesive coated seeds.

4,465,018

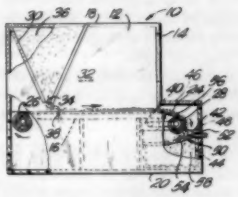
PET RELIEF STATION

Terry B. Mopper, 322 Grasmere Dr., Staten Island, N.Y. 10305

Filed May 18, 1983, Ser. No. 495,774

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—1 **7 Claims**



1. A pet relief station comprising:

(a) a housing having a plurality of walls with an opening formed in at least one of said plurality of walls to permit a pet to enter and exit said housing;

(b) a pet supporting member in said housing terminating short of one of said plurality of walls to define a waste-receiving opening therebetween;

(c) litter dispensing and spreading means in said housing for dispensing and spreading litter;

(d) a movable sheet on said pet support member spaced below said dispensing and spreading means to receive litter therefrom; said litter being spread along said movable sheet by said litter dispensing and spreading means, said movable sheet extending into said waste-receiving opening at one end;

(e) moving means for moving said sheet;

(f) and a removable disposal chamber positioned below said opening to receive waste materials and litter from said sheet as said sheet is removed.

4,465,019

METHOD FOR DEODORIZING ANIMAL WASTE AND PREPARING PET LITTER

Robert M. Johnson, Weston, Conn., assignor to Green Mountain Products, Norwalk, Conn.

Division of Ser. No. 471,660, Mar. 3, 1983, Pat. No. 4,424,763, which is a continuation-in-part of Ser. No. 376,584, May 10, 1982, Pat. No. 4,386,580. This application Sep. 2, 1983, Ser. No. 529,121

Int. Cl.³ A01K *1/015*

U.S. Cl. 119—1 **8 Claims**

1. A method for deodorizing animal waste comprising the steps of:

depositing said waste into contact with dried citrus pulp, said dried citrus pulp being obtainable by:

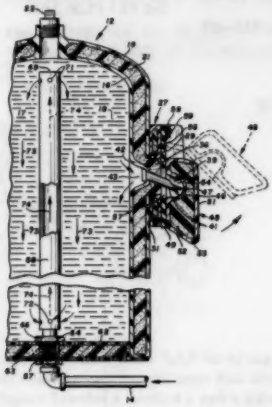
(a) squeezing raw citrus fruits to remove the juice therefrom; and

(b) cutting and drying squeezed citrus fruit into small pieces of citrus pulp having a range of about ¼ inch to ½ inch in both length and width.

4,465,020
APPARATUS FOR PREVENTION OF FREEZING OF WATER LINE

Kenneth L. Schafer, Rte. 3, Box 73, Le Sueur, Minn. 56058

Filed Sep. 13, 1982, Ser. No. 416,896
Int. Cl.³ A01K 7/02
U.S. Cl. 119—73 33 Claims

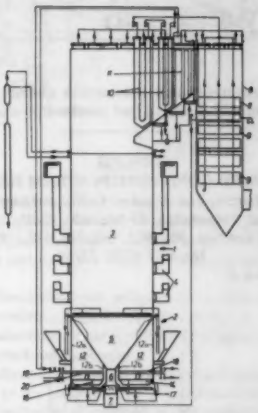


1. An animal watering apparatus comprising: a tank having thermal insulated wall means surrounding a chamber having a generally upright longitudinal axis, an upper portion and a lower portion for accommodating water, said tank having a side wall and bottom wall, water inlet means connected to said bottom wall adapted to be connected to a supply of water under pressure, tubular means connected to the water inlet means located generally along the longitudinal axis of the chamber, said tubular means extended from the bottom wall to the upper portion of said chamber, said tubular means having a passage and open upper end for carrying water from the water inlet means to the upper portion of said chamber, hole means in the lower end of the tubular means open to the chamber and passage whereby water in the lower portion of the chamber flows through said hole means into the passage to the upper portion of said chamber and water in the upper portion of the chamber flows to the lower portion of the chamber when the temperature of the water in the lower portion of the chamber is greater than the temperature of the water in the upper portion of the chamber, animal operated means for dispensing water mounted on said side wall and protruding outwardly therefrom, thermal insulated housing means mounted on the side wall surrounding said animal operated means, said housing means having laterally disposed generally upright ribs and an opening located between said ribs for said animal operated means, thermal insulated cover means located between said ribs covering said opening, generally vertical flexible sheet means secured to said cover means and extending substantially across the upper width of said cover means, means securing a portion of the sheet means to the housing means between said ribs and above the cover means whereby the cover means can be moved by an animal to an open position providing access to the animal operated means for dispensing water.

4,465,021
STEAM GENERATOR WITH A MAIN BOILER AND A FLUIDIZED BED FURNACE

Robert Richter, Mannheim; Helmut Wiehn, and Horst Lichtenberger, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 399,020
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1981, 3133298
Int. Cl.³ F22B 1/02
U.S. Cl. 122—4 D 9 Claims



1. Steam generator with a main boiler and at least one fluidized bed furnace connected at flue gas side with the main boiler, comprising a combustion chamber having burners, side walls and a bottom, and evaporator heating surfaces, said burners being arranged in said side walls of said combustion chamber; feedwater preheaters, superheaters and reheat superheaters connected downstream of said combustion chamber; and heating surfaces arranged in the fluidized bed furnace; said fluidized bed furnace being connected with the main boiler underneath the boiler bottom, said boiler bottom having tubes fanned out for the formation of a flue gas passage, said fluidized bed furnace is suspended on the main boiler, said tubes of said boiler bottom comprising also tie rods.

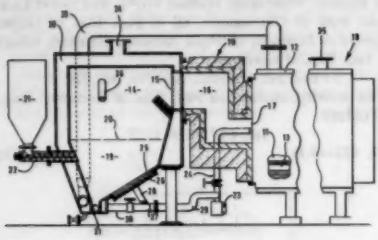
4,465,022
FLUIDIZED BED RETROFIT BOILER

Michael J. Virr, 580 Franklin, North Muskegon, Mich. 49445

Continuation of Ser. No. 399,961, Jul. 19, 1982, abandoned. This application Jul. 23, 1982, Ser. No. 401,284
Int. Cl.³ F22B 1/02
U.S. Cl. 122—4 D 6 Claims

1. A method of adapting for solid-fuel firing a boiler having a combustion chamber with an opening for normally receiving a fluid fuel burner, comprising the steps of attaching to said boiler at said opening and upstream of said combustion chamber, (a) a fluidized bed combustion chamber, (b) solid fuel feed means for feeding solid fuel to the fluidized bed, (c) primary combustion air feed means for feeding primary combustion air

to the fluidized bed, and (d) secondary combustion air feed means adjacent said opening for feeding secondary combustion



air to said first mentioned combustion chamber with gases emerging from said fluidized bed combustion chamber.

4,465,023

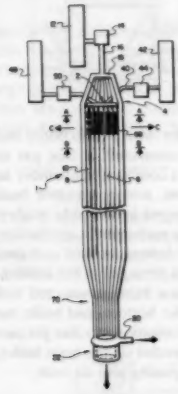
PROGRAMMED COMBUSTION STEAM GENERATOR

William R. Wagner, Los Angeles, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 30, 1982, Ser. No. 432,178

Int. Cl.³ F22B *37/00*

U.S. Cl. 122—6 A **20 Claims**



1. A steam generator comprising:

a highly elongated, cylindrical combustion chamber having thermally conductive walls comprising a plurality of longitudinally adjoined tubes, said combustion chamber having an input end, an output end and interior surfaces;

an injector assembly sealingly affixed to said input end comprising a plurality of individual injector elements arrayed upon a peripheral region and an inner region of an injector plate for injecting under pressure associating streams of fuel and oxidizer into said input end, those injector elements at the peripheral region of said injector plate initiating a more rapid burning rate in the respective association streams than those injector elements at the inner region of said injector plate, so that said injector initiates a combustion process which progresses in discrete stages along the length of said combustion chamber to thereby graduate the heat released from said combustion process;

means for supplying fuel and oxidizer under pressure to said injector assembly; and

means for supplying a flow of water through said plurality of tubes from said input end to said output end for extracting heat from said combustion chamber at a rate which matches the heat generation at any given length segment of said combustion chamber so that said combustion process does not attain a temperature where substantial quantities of nitrogen oxides and produced.

4,465,024

WATER HEATER

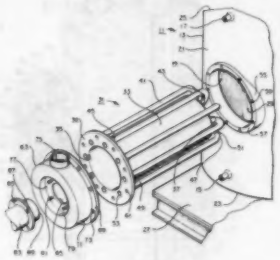
Charles L. Adams, Euless, Tex., assignor to PVI Industries Incorporated, Fort Worth, Tex.

Continuation of Ser. No. 369,207, Apr. 16, 1982, abandoned.

This application Sep. 23, 1983, Ser. No. 534,402

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—17 **12 Claims**



1. A gas or oil fired water heater, which comprises:

a closed tank normally containing water under pressure and having a top, a bottom, a sidewall extending between said top and bottom, a water inlet, a water outlet and an opening in said sidewall;

a combustion chamber assembly having a submergible, pressurized combustion chamber portion with multiple external heating surfaces, said combustion chamber portion normally extending through said sidewall opening of said closed tank so that all of said heating surfaces are submerged in said water under pressure;

said combustion chamber assembly including means for readily removing same from and installing same in said opening, said means comprising a mounting portion for detachably but sealingly engaging said tank opening;

said combustion chamber portion comprising a substantially cylindrical body portion having an open end located adjacent said mounting portion which communicates with the exterior of said water tank and a closed end at the opposite end of said body portion;

said multiple external heating surfaces including a multiplicity of substantially U-shaped fire tubes of substantially smaller diameter than and spaced equidistantly about the entire periphery of said body portion, each of said fire tubes having a long leg and a short leg;

said short leg of each of said fire tubes extending through said closed end of said body portion to communicate with the interior of said combustion chamber portion at said closed end;

said long leg of each of said fire tubes extending adjacent said body portion through said mounting portion to the exterior of said water tank;

a flue collector mounted on the exterior of said water tank and having a flue opening therein which communicates with said open end of said body portion, said flue collector having an annular chamber surrounding said flue opening and separated thereform, said annular chamber communicating with said long leg of each of said fire tubes, said annular chamber having a flue outlet therein; and

a forced draft burner mounted on the exterior of said water tank and communicating with said combustion chamber opening for causing combustion to take place within said body portion of said submergible, pressurized combustion

chamber portion so that substantially all combustion takes place within said water tank to minimize heat loss.

4,465,025

STEAM GENERATOR

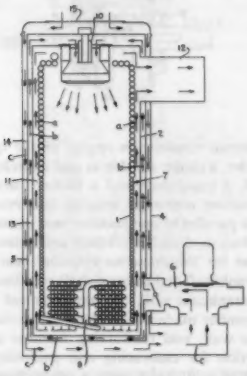
Hans J. Schröder, Schumannstr. 27, D-4150 Krefeld, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,675

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214228

Int. Cl.³ F22B 5/02

U.S. Cl. 122—19 9 Claims



1. A steam generator, comprising:

a water flow pipe having a water inlet and a steam outlet for generating steam in said flow pipe, said flow pipe forming an enclosure structure defining a combustion space;

a burner arranged in said combustion space for heating water in said flow pipe by the emission of exhaust gases;

an inner housing surrounding said enclosure structure defining therewith an inner chamber provided with an exhaust gas outlet for passing exhaust gases from said burner through said inner chamber and into said exhaust gas outlet;

an intermediate housing surrounding said inner housing defining therewith an intermediate chamber through which combustion air is supplied to said burner;

an outermost housing surrounding said intermediate housing defining therewith an outer chamber provided with an aspiration opening;

a blower, having a suction side and an outlet side, wherein the suction side is connected to the outer chamber and the pressure side to the intermediate chamber, forcing combustion air flowing from the aspiration opening through the outer chamber to the suction side of the blower, and from the pressure side of the blower into and through the intermediate chamber to the burner, thus generating exhaust gases which are directed through the combustion space into and through the inner chamber to the exhaust gas outlet;

whereby the combustion air is preheated in two temperature drop stages in that the exhaust gases in the inner chamber will pre-heat the combustion air flow in the intermediate chamber, and the pre-heated combustion air in the intermediate chamber will pre-heat the fresh incoming combustion air in the outer chamber.

4,465,026

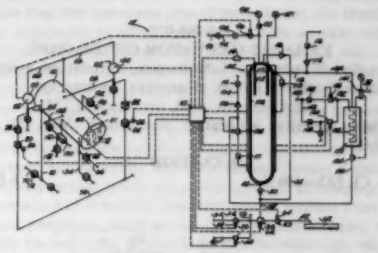
AUTOMATIC BOILER BLOWDOWN SYSTEM INCLUDING BLOWDOWN SEQUENCE CONTROL

Victor V. Carberry, N55 W21404 Logan Dr., Menomonee Falls, Wis. 53051

Filed Mar. 7, 1983, Ser. No. 472,581

Int. Cl.³ F22B 37/54

U.S. Cl. 122—382 17 Claims



1. Apparatus for automatically periodically discharging a predetermined quantity of water containing impurities from a boiler including a head space adapted to contain steam, a first water column and a second water column, the apparatus comprising

a closed blowdown tank adapted to receive a charge of water containing impurities from the boiler,

means for selectively connecting the head space of the boiler to the blowdown tank, and

means for alternatively and selectively connecting the water columns to the blowdown tank and to a drain, said means for alternatively and selectively connecting including means for precluding connection of the water columns to the blowdown tank when the blowdown tank is connected to the drain, said means for alternatively and selectively connecting including means for selectively controlling discharge of water from said first water column into said blowdown tank and means for selectively controlling discharge of water from said second water column into said blowdown tank.

12. Apparatus for automatically periodically discharging a predetermined quantity of water containing impurities from a boiler including a head space adapted to contain steam, a first blowdown outlet in a bottom part of the boiler, and a second blowdown outlet for discharging water from the boiler, the second blowdown outlet being above the first blowdown outlet, the apparatus comprising:

a closed blowdown tank adapted to receive a charge of water containing impurities from the boiler,

means for alternatively and selectively connecting the first blowdown outlet of the boiler to the blowdown tank and to a drain, said means for alternatively and selectively connecting including means for precluding connection of the boiler to the blowdown tank when the blowdown tank is connected to the drain,

means for selectively connecting the head space of the boiler to the blowdown tank, and

means for controlling discharge of water from the first blowdown outlet and the second blowdown outlet in response to the sensed condition of the water in the boiler, said means for controlling including

means for sensing the quantity of impurities in the water in the boiler,

means for causing discharge of water from the first blowdown outlet when the quantity of impurities in the water in the boiler reaches a first level, and

means for causing discharge of water from the second blowdown outlet when the quantity of impurities in the water in the boiler reaches a second level higher than the first level, said means for causing water to be discharged from

said second blowdown outlet including means for increasing the rate of discharge of water discharged through said second blowdown outlet in response to an increase in the quantity of impurities in the water in the boiler when the quantity of impurities in the water in the boiler is above said second level.

4,465,027

EXHAUST GAS VAPOR GENERATOR

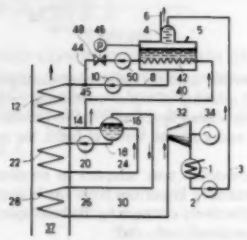
Hans-Rudolf Steinegger, Schaffhausen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 16, 1983, Ser. No. 475,738

Claims priority, application Switzerland, Mar. 31, 1982, 1973/82

Int. Cl.³ F22D *7/00*

U.S. Cl. 122—406 S **8 Claims**



1. In an exhaust gas vapor generator, the combination comprising

a degasser for receiving a working medium;

a feed pump for pumping a flow of working medium from said degasser;

an exhaust gas duct for conveying a heated gas therethrough;

an economizer disposed in said exhaust gas duct and connected with said feed pump for receiving a flow of working medium therefrom for heat exchange with the heated gas in said duct;

an evaporator disposed in said exhaust gas duct for receiving a flow of heated working medium from said economizer;

means for bleeding off a part-flow of heated working medium from between said economizer and said evaporator;

a contact heat exchange means for transferring heat from said part-flow to said degasser; and

means for returning said part-flow to said flow between said feed pump and economiser.

4,465,028

IGNITION IMPROVERS FOR INTERNAL COMBUSTION ENGINES

Helmut Waniczek, Cologne; Herbert Bartl, Odenthal, and Klaus Krüger, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,516

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129271

Int. Cl.³ F02B *75/12*

U.S. Cl. 123—1 A **26 Claims**

1. In a diesel engine comprising a combustion zone, said combustion zone being in fluid communication with a fuel reservoir, said fuel reservoir containing a fuel for said diesel engine the improvement wherein said fuel contains a nitric acid ester of a mono or poly saccharide, as ignition improver.

4,465,029

REINFORCED CRANKCASE FOR AN INTERNAL COMBUSTION ENGINE WITH A BALANCER SHAFT

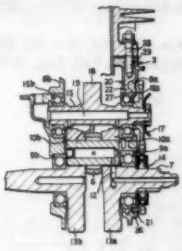
Yukio Matsumoto, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 21, 1982, Ser. No. 380,889

Claims priority, application Japan, May 25, 1981, 56-78026

Int. Cl.³ F02B *75/06*; F16C *3/04*

U.S. Cl. 123—195 A **5 Claims**



1. In an internal combustion engine of the type which includes a cylinder, a piston slidable in said cylinder, a crankcase having a wall, a crankshaft and a balance shaft, each shaft carrying respective eccentric weights and rotatable around axes which are parallel to one another, said piston being linked to said crankshaft, and said crankshaft and balance shaft being linked together for simultaneous rotation, bearing means on each of said crankshaft and balance shaft rotationally mounting them to said crankcase wall, the improvement comprising: a reinforcing member made of a stronger material than that of said crankcase wall, said reinforcing member comprising an enclosing portion for embracing and enclosing the bearing means of each of said shafts, with a connecting wall portion joining said enclosing portions to one another, said reinforcing member being cast into said crankcase wall, said connecting wall portion resisting compressive and tensile forces exerted on said reinforcing member as a consequence of rotation of said shafts.

4,465,030

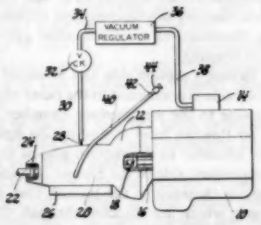
TRANSMISSION HAVING A VACUUM VENTILATION CONTROL

Jerome D. Maurer, Dewitt, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1983, Ser. No. 523,271

Int. Cl.³ F02B *77/00*; F16K *24/06*

U.S. Cl. 123—198 P **3 Claims**



1. An improvement in vented automatic transmissions for use with internal combustion engines having a vacuum source, said improvement comprising; a passage connecting the transmission vent with the vacuum source; one-way valve means in said passage for preventing fluid flow from the vacuum source to the transmission vent; vacuum regulator means in said pas-

sage between said vacuum source and said check valve means for limiting the maximum vacuum in said transmission; a fill tube on said transmission; and restrictor means on said fill tube for limiting the air flow into said transmission whereby the interior of said transmission is maintained at a pressure less than atmosphere when the engine is operating and the vacuum source is functioning.

4,465,031

IGNITION PLUG WITH IGNITION CHAMBER, AND INTERNAL COMBUSTION ENGINE PROVIDED THEREWITH

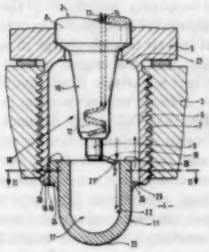
Franz Bamer; Erich Breuser, and Reinhard Latsch, all of Vaihingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,659

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, 3206708

Int. Cl.³ F02B *19/12, 19/18*

U.S. Cl. 123—260 **12 Claims**



2. An ignition plug for an internal combustion engine having a main combustion chamber, the ignition plug comprising means forming an ignition chamber including a first ignition chamber part which has an end wall separating said first ignition chamber part from said main combustion chamber of said internal combustion engine, and a second ignition chamber part which communicates with said first ignition chamber part and has a circumferential wall with an inner parallel surface and a greater cross section than said first ignition chamber part; electrode means including an electrode supported on an insulator, and a mass electrode arranged in the region of transition between said first and second ignition chamber parts and forming together with said electrode an ignition spark gap, said second ignition chamber part being arranged adjacent to said first ignition chamber part at the side of said electrode, said electrode means including a heating resistor united with said insulator, said insulator having an insulator foot extending into said second ignition chamber part, said heating resistor being arranged in said insulator foot; and means forming at least one overflow passage arranged to communicate the main combustion chamber with said ignition chamber, said overflow passage being open directly into said second ignition chamber part from said end wall of said first ignition chamber part and is located inside said inner parallel surface of said circumferential wall of said second ignition chamber.

4,465,032

PRECOMBUSTION CHAMBER FOR INTERNAL COMBUSTION ENGINE

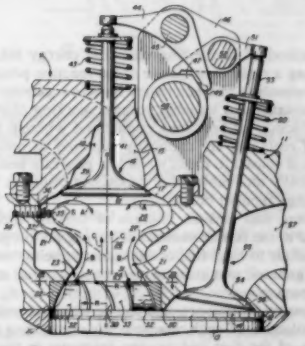
Noel G. Artman, 15830 Nicklaus La., Sun City, Ariz. 85351

Filed Jan. 10, 1983, Ser. No. 456,881

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—263 **28 Claims**

1. An internal combustion engine having a main air inlet passage communicative with a variable volume space within a cylinder of such engine, a precombustion chamber constituting a section of such passage and interposed serially between said space and an upstream portion of said passage, the chamber having a principal axis extending between opposite ends thereof and of which ends one is an air inlet end having a valve seat surrounding said axis and through which the chamber is communicative with the upstream passage portion and of which ends the other is an open end in juxtaposed two-way open communication between said space and the interior of the chamber, the transverse area of such open end being substantially less than the tranaverse area of the cylinder, the chamber having, adjacently to its air inlet end, a main portion with a radially inwardly-facing periphery of girth about said axis exceeding that of the valve seat, a portion of the chamber adjacently to said open end constituting a vestibule of the chamber with a radially inwardly-facing periphery surrounding said axis, a portion of the main chamber portion periphery nearest to the vestibule being convergent toward the vestibule and toward said axis, the vestibule having therein a central substantially unobstructed space contiguously enveloping the chamber axis and in radially inwardly-spaced relation from the vestibule periphery, said central space accommodating substantially unobstructed flow of air or gas therethrough, via the chamber open end, between the variable volume space and the chamber main portion, and air deflecting means disposed captively in the vestibule between the central space and the vestibule periphery, such air deflecting means being configured to operate cooperably with the vestibule periphery to effect helical motion, about the chamber axis, to air contacting such



air deflecting means pursuant to such air flowing from the variable volume space through the vestibule en route to the chamber main portion for compression therein, means for admitting fuel into the chamber main portion to coexist with air compressed therein in the form of an ignitable air-fuel mixture, and fuel igniting means in such chamber main portion for igniting said mixture.

18. The process of forcing air into and compressing such air in an engine precombustion chamber constituting a section of an air inlet passage communicating with a variable volume space within a cylinder of such engine and said chamber being disposed serially between said space and an upstream portion of the passage, the chamber having opposite ends spaced apart endwise of a principal axis thereof and through one of which ends a principal portion of the chamber adjacently to such end is communicative through an air inlet valve with the upstream passage portion, and the chamber also having adjacently to its other end a vestibule surrounding said axis and communicating axially through an open end thereof in such other end between the variable volume space and said principal portion of the chamber, the transverse area of such open end of the vestibule being substantially less than the transverse area of the cylinder, said process comprising the step of forcing from said space axially of the chamber through said open end into and through the vestibule into the principal chamber portion an air stream composed of a central portion contiguously embracing said

axis and a peripheral portion contactively surrounding the central portion radially outwardly from said axis, the step of imparting helical motion about said axis to the peripheral portion of the stream relatively to the central portion thereof while the stream portions are in the vestibule and the further step of progressively diminishing the girth of the air stream as it approaches the main chamber portion.

4,465,033

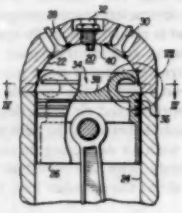
ENERGY CONVERSION CYCLE FOR INTERNAL COMBUSTION ENGINE AND APPARATUS FOR CARRYING OUT THE CYCLE

Richard F. Blaser, 214 Pierce Ave., Cape Canaveral, Fla. 32920

Filed Oct. 25, 1978, Ser. No. 954,623

Int. Cl.³ F02B *23/00*

U.S. Cl. 123—295 **50 Claims**



1. A method of converting chemical energy into thermal energy using a rapid dissociative chain reaction process manifesting combustion characteristics between gaseous fuel and oxygen reactants in a variable volume working chamber of a work producing, air breathing engine and wherein individual charges of reactants are cyclically supplied to said working chamber and caused to rapidly react to generate heat for driving a cyclically moveable work producing piston or pistons in said working chamber comprising:

(a) forming fuel and air charges of varying fuel-air ratio related to the power demand of the engine, the proportion of total air to total fuel of each charge being varied from stoichiometric at maximum power to excess air at less than maximum power;

(b) increasing by compression the density and activation of the molecules of each charge while controlling the distribution of the fuel and oxygen reactants in the working chamber in such a manner that when the reaction is initiated, substantially all of the fuel is located in the working chamber with a proportion of air that is less than stoichiometric and in sufficient proportion to assure a maximum potential rate of reaction of available reactants, and the balance of the charge, comprising substantially only air, is located in a sustaining air reservoir chamber of substantially fixed volume located adjacent the working chamber and in communication with the latter through a molecular partition area that is variable from a minimum first area when the working chamber is at minimum volume to a second larger area when the working chamber is at greater than minimum volume, said partition area being bounded by surfaces that favor to a maximum extent rebound motion towards the working chamber of gaseous molecules approaching said area from the working chamber or passing through said area towards the working chamber;

(c) initiating reaction of each charge by suitable means and sustaining the reaction in the working chamber while the working chamber is approaching and is at minimum volume and while it is expanding in such a manner that the reaction is carried out at a maximum rate with the proportion of reactants on the excess fuel side of stoichiometric throughout the reaction until the fuel has been depleted to the point that such reaction can no longer be sustained at a desired work producing rate with the reaction being sustained by using as a replenishment source of activated molecular oxygen such oxygen as is naturally diffused through the partition volume into the working chamber; and

(d) exhausting the working chamber near the end of each reaction.

25. A work producing engine including apparatus for cyclically converting chemical energy into thermal potential and using the resultant heat to cyclically drive a moveable work producing piston in the engine, the conversion of chemical energy to thermal potential occurring by a rapid dissociative chain reaction process manifesting combustion characteristics between gaseous fuel and oxygen reactants, said piston cyclically activating reactant charges supplied to a variable volume working chamber by compressing same after a charge intake event comprising:

(a) a working chamber and a moveable piston or pistons associated therewith connected to the engine work output means and serving to convert thermally generated gaseous pressure to work during cyclical working chamber expansion events;

(b) means for supplying fuel and air to the working chamber, including means for independently controlling the proportion of fuel and air in each charge in accordance with the power demand of the engine so that the proportion of oxygen to fuel is variable from stoichiometric at full engine power demand to a proportion in excess of stoichiometric at less than full power demand;

(c) a fixed volume sustaining chamber adjacent the working chamber and isolated therefrom except through a restricted area comprising a molecular partition area that is variable from a minimum first area when the working chamber is at minimum volume to a maximum second area when the working chamber is larger than minimum volume, the partition area being defined as the partition width times the partition length, where the partition width is the shortest transverse dimension of said restricted area and the partition length is the length of said restricted area measured along the partition width;

(d) a molecular partition volume defined as the partition area times the partition depth, where the partition depth is the straight line distance between the partition width and the back wall of the sustaining chamber in a direction extending normal to the partition width;

(e) the boundary surfaces surrounding and defining said working chamber, sustaining chamber and said partition area being configured to favor to a maximum extent molecular rebound motion of molecules in the working chamber in a direction towards the working chamber volume, rebound of gaseous molecules in the sustaining chamber but not in the partition volume towards the interior of the sustaining chamber volume, and rebound of gaseous molecules passing through the partition area from the partition volume into the working chamber towards the central working chamber volume;

(f) means for controlling distribution of the reactants during the intake and activation events to cause substantially all of the fuel proportion of each charge to be located and retained in the working chamber during the activation and reaction events with the proportion of fuel to oxygen being in excess of stoichiometric to a sufficient extent to insure a maximum potential rate of reaction for the available reactants when the reaction is initiated, and to cause the remaining oxygen portion of each charge to be located in the sustaining chamber during the activation and reaction events;

(g) said molecular partition volume being dimensioned and configured to control the availability of activated oxygen molecules in the working chamber at initiation of and during the reaction process in such a manner that the reaction starts and proceeds to useful completion with the proportion of available fuel, including partially reacted

fuel species, to oxygen always being in excess of stoichiometric; and

(h) means for exhausting reaction products from the working chamber after each expansion event.

4,465,034

SWIRL GENERATING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

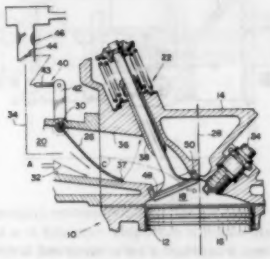
Saburo Tsutsumi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 28, 1980, Ser. No. 211,366

Claims priority, application Japan, Dec. 4, 1979, 54-167137[U]

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **12 Claims**



4. In a method of operating an internal combustion engine having a cylinder disposed about an axis and a piston slidable in said cylinder to define a variable volume combustion chamber, the steps of:

inducting a charge into said combustion chamber through an induction passage;

controlling the flow of charge through said induction passage using a throttle valve;

introducing said charge into said combustion chamber in a direction tangential with respect to the wall of said cylinder thus causing the charge to swirl in said combustion chamber about said cylinder axis;

controlling communication between said induction passage and said combustion chamber with a valve;

passing said charge through a variable cross section opening defined by a vane pivotally mounted in said induction passage downstream of said throttle valve;

accelerating and forming the charge flowing through said induction passage upstream of said valve into a jet stream having an essentially rectangular cross section which is elongate in a direction generally parallel to a plane normal to said cylinder axis; and

locating said vane sufficiently close to said combustion chamber so that a component of the flow entering the combustion chamber in said plane generally normal to said cylinder axis is maximized to increase the strength of the swirl about said cylinder axis.

6. An internal combustion engine comprising:

at least one cylinder disposed about an axis and having a piston slidable therein to define at least one variable volume combustion chamber;

an induction passage leading from a source of air to said combustion chamber, said induction passage being oriented with respect to said cylinder to introduce a fluid charge into said combustion chamber tangentially with respect to the wall of said cylinder so that the charge enters said combustion chamber and swirls about said cylinder axis;

a throttle valve disposed in said induction passage for controlling the flow of fluid therethrough;

a valve for controlling fluid communication between said induction passage and said combustion chamber; and

a vane pivotally mounted in said induction passage downstream of said throttle valve for defining a variable cross section opening, said vane being located upstream of and sufficiently close to said combustion chamber to be operable to accelerate the fluid charge and form said charge into a jet stream having a generally rectangular cross section which is elongate in a direction parallel to a plane normal to said cylinder axis and to cause a component of the flow entering the combustion chamber in said plane normal to said cylinder axis to be maximized to strengthen the swirl about said cylinder axis, said vane being operable to pivot between a position of minimum cross section opening and a position which generally points towards said valve.

4,465,035

INTERNAL COMBUSTION ENGINE

Roderick R. Carr, Sheffield, England, assignor to Bretton Patents Limited, Hathersage, England

Filed Sep. 27, 1982, Ser. No. 424,176

Claims priority, application United Kingdom, Sep. 29, 1981, 8129359

Int. Cl.³ F02M *29/00*

U.S. Cl. 123—52 MB **4 Claims**

1. An internal combustion engine having a plurality of cylinders, respective inlet valves through which air is caused to pass into said cylinders, a cylinder head, an inlet manifold having respective inlet valve ports leading to the cylinders, and an adjustable device, movable in response to changes of engine speed, whereby, at least at low engine speed, air passing through each inlet valve port is caused to flow as a vortically moving mass so that a high rate of flow of air within the inlet valve ports is maintained even at relatively low engine speeds and throughout periods when the respective inlet valves are closed, said adjustable device being constituted by a movable slide arrangement located adjacent a cylinder head inlet manifold face, the slide arrangement being adjustable in response to at least one of the following, that is to say engine speed and throttle depression, and being interconnected with a balance pipe system including cutaways in a downstream face of the slide arrangement which act as variable throats and permit charges to pass into cavities behind the slide arrangement and then to other cylinders via interconnecting pipes.

4,465,036

INTERNAL COMBUSTION ENGINE

Edward K. Forbes, deceased, late of Lake Jackson, Tex., and Ivah T. Forbes, executor, 460 Hwy. 332, #135, Lake Jackson, Tex. 77566

Filed Aug. 12, 1982, Ser. No. 407,337

Int. Cl.³ F02B *59/00*

U.S. Cl. 123—57 R **3 Claims**

1. A multicylinder internal combustion engine including a crank shaft located within a crank housing, the improvement comprising:

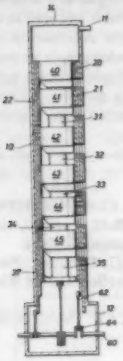
(a) a cylinder housing mounted on the crank shaft housing and extending vertically upwardly therefrom;

(b) a plurality of concentric sleeves arranged within said cylinder housing and enclosing a plurality of pistons and cylinders arranged vertically in tandem within said concentric sleeves;

(c) said pistons and cylinders are arranged in axially spaced

piston - cylinder pairs, each of said pairs being connected to one of said sleeves by connecting studs;

(d) rod means connecting said concentric sleeves to the crank shaft for rotating the crank shaft responsive to reciprocal movement of said concentric sleeves;



(e) valve means communicating with said cylinders permitting intake and exhaust of gases from said cylinders; and

(f) timing means causing said valve means to open and close with a cycle of the engine.

4,465,037

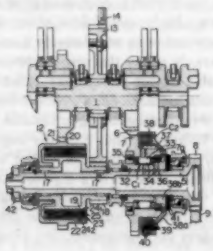
SHOCK ABSORBING CAM SHAFT DRIVING SYSTEM

Hideo Tanaka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,171

Int. Cl.³ F01L *1/02*

U.S. Cl. 123—90.31 **4 Claims**



1. In an internal combustion engine having a crankshaft and a valve actuating cam shaft, a driving system for said cam shaft comprising:

a driving gear fixed on said crankshaft;

a power transmission gear for driving said cam shaft;

a driven gear fixed to said cam shaft and driven by said power transmission gear;

an intermediate shaft; and

a shock absorbing gear assembly rotatably mounted on said intermediate shaft, said shock absorbing gear assembly including an input gear meshing with and driven by said driving gear, an output gear meshing with and driving said power transmission gear, and an annular resilient shock absorbing member coaxial with said intermediate shaft interposed between and resiliently connecting said input gear and said output gear, whereby rotational force is resiliently transmitted from said driving gear to said power transmission gear through said shock absorbing gear assembly.

4,465,038

VALVE TAPPET

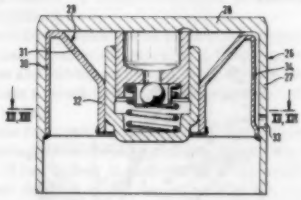
Walter Speil, Ingolstadt, Fed. Rep. of Germany, assignor to Motomak Motorenbau Maschinen- Und Werkzeugfabric, Konstruktionen GmbH, Ingolstadt, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,176

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006644

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.55 **1 Claim**



1. A valve tappet for internal combustion engines with overhead cam shaft which is moveably mounted in a sliding guide directly between a cam and a valve stem and is designed as an automatic play compensating element, comprising an outer part and an inner part guided in one another for axial displacement, said parts enclosing between them a pressure chamber which is connected by a non-return valve with an oil storage chamber filled with oil from a lubricant cycle of an engine, the outer part cooperates with said cam and sliding guide and the inner part with said valve stem, the oil storage chamber being arranged inside the outer part so that it extends exclusively in radial direction around the inner part with an oil feed bore provided substantially in the center of an outer shell of the outer part which is adjoined by an oil carrying passage on its inside opening freely into the oil storage chamber in the proximity of the upper end of the latter, said outer part being formed by a first cup-shaped part with a cylindrical wall and a closed bottom at one end, and by a second part with a cylindrical outer shell fitting tightly into the bore of the cylindrical wall of the first part and which passes over at one end adjoining the first part into a frustum-shaped zone facing away from the bottom, which is adjoined in turn by a cylindrical zone facing away from the bottom to receive the inner part, the oil carrying passage opening freely into the oil storage chamber in the proximity of the bottom being formed by the first and the second part at a circumferential point at which the oil feed bore is provided said second part having in a circumferential area of said oil feed bore a trough-shaped bead extending in longitudinal direction which terminates freely at the end corresponding with the bottom of said first part but does not extend to the terminal edge of said second part at the opposite end.

4,465,039

ENGINE BLOCK HEATER WITH EXPANSION YOKE

Ronald C. Snelgrove, Scarborough, and Joseph B. Brinkhof, Oshawa, both of Canada, assignors to Budd Canada Inc., Kitchener, Canada

Continuation of Ser. No. 175,945, Aug. 7, 1980, abandoned. This application Dec. 14, 1982, Ser. No. 449,573

Claims priority, application Canada, Sep. 28, 1979, 336783

Int. Cl.³ F02N *17/02*

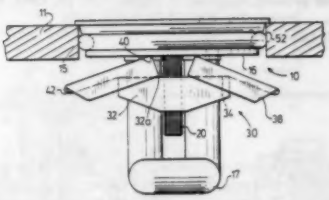
U.S. Cl. 123—142.5 E **9 Claims**

1. In an engine block heater adapted to be inserted into, and to be secured in, an opening in an engine block wall having inner and outer surfaces about said opening, said block heater

including a plug member having an outer face and an inner face and shoulder means on the plug member adjacent to said outer face retainingly engageable with said outer surface, a heating element projecting from said inner face and a yoke assembly positioned adjacent to said inner face for securing said plug member within said opening in cooperation with said shoulder means, said yoke assembly comprising:

a pressure bar substantially shorter than the diameter of said opening and having opposite ends;

a pair of wing members mounted on and carried by said pressure bar and each having a first end positioned between said bar and said inner face, one of said wing members extending obliquely across one end of said bar and the other of said wing members extending obliquely across the opposite end of said bar whereby said wing members extend in a diverging relationship away from said inner face and are fulcrumed on said bar ends;



hinging means connecting each of said wing members individually directly to the associated bar end so that each wing member is pivotable intermediate said first and the second ends thereof about the fulcrum on the associated end of said pressure bar; and

a screw element extending through an opening which extends in said plug member through both of said faces, and said screw element being in engagement with said pressure bar, so that as said screw element is tightened at said outer face, said presssure bar is drawn towards said inner face and each wing member pivots about its fulcrum as said first ends of said wing members are caused to be moved toward each other slidably on said inner face while said second ends of said wing members move away from each other until said second ends lie in overlapped plug member retaining engaging relationship with wall portions of said engine block wall inner surface.

4,465,040

VALVE GUIDE INSERT

Winton J. Pelizzoni, Allentown, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.

Filed Dec. 5, 1980, Ser. No. 213,321
Int. Cl.³ F01L *3/08*
U.S. Cl. 123—188 GC **18 Claims**

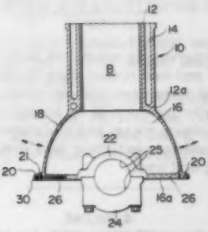
6. A valve guide insert for lining a valve guide of an internal combustion engine comprising a tubular, metallic sleeve having a spring end and a port end, said sleeve having an outer surface adapted to fit within the valve guide of the internal combustion engine and a length of an inner surface to receive a valve stem, said sleeve including a first component extending over a major portion of the length of the inner surface and a second component extending over a minor portion of the length of the inner surface, said first component comprising a material of high thermal conductivity compared to that of said second component; said second component comprising a material of greater wear resistance than the material of said first component, said material of said second component selected from the class consisting of heavy metal carbide and stellite, said second component being disposed only in an area of wear between the center of said sleeve and said port end, said sleeve having a substantially constant inner diameter extending substantially the entire length of said sleeve.

4,465,041

CYLINDER BLOCK OF INTERNAL COMBUSTION ENGINE

Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 23, 1981, Ser. No. 324,149
Claims priority, application Japan, Nov. 26, 1980, 55-168242[U]
Int. Cl.³ F02F *7/00*
U.S. Cl. 123—195 R **6 Claims**



1. A cylinder block of an internal combustion engine, comprising:

a plurality of main bearing bulkheads, each having a bottom section to which a main bearing cap is fastened, said main bearing bulkheads being made of a light alloy;

two oppositely disposed oil pan installation flange portions adapted for attachment of an oil pan, said oil pan installation flange portions being integral with said bearing bulkheads and made of the same light alloy as said bearing bulkheads, said oil pan installation flange portions being positioned at a bottom section of said cylinder block; and

a reinforcement member cast in and embedded throughout each oil pan installation flange portion and each bearing bulkhead bottom section, the material of said reinforcement member being different from and higher in mechanical strength than said light alloy, said reinforcement member including first sections, each of which is cast in and embedded along in one of said oil pan installation flange portions, and second sections, each of which is cast in and embedded along in one of said bearing bulkhead bottom sections, said reinforcement member first sections being integral with said reinforcement member second sections.

4,465,042

CRANKLESS INTERNAL COMBUSTION ENGINE

Robert D. Bristol, P.O. Box 337, Beulah, Mich. 49617

Continuation-in-part of Ser. No. 157,870, Jun. 9, 1980, Pat. No. 4,363,299. This application Sep. 1, 1982, Ser. No. 413,610
Int. Cl.³ F16H *21/02*
U.S. Cl. 123—197 R **29 Claims**

1. A power transmission mechanism comprising:

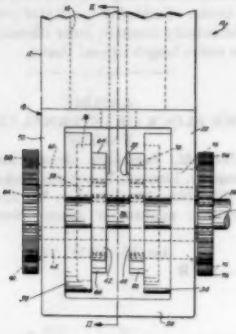
a fixed cam member defining an elongated, closed loop cam track having first and second, spaced runs;

force transmission means disposed within and movable

around said cam track for transmitting a force along said cam track, said transmission means including a plurality of independent unconnected members disposed within and moving along said track in abutting relationship;

an output shaft;

means for rotatably supporting said output shaft adjacent said first run of said cam member; and



drive means operatively connected to said force transmission means and said output shaft for drivingly interconnecting said force transmission means and said output shaft whereby power will be transmitted between said force transmission means and said output shaft, said independent members contacting said drive means as they move along said track.

4,465,043

REGULATING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

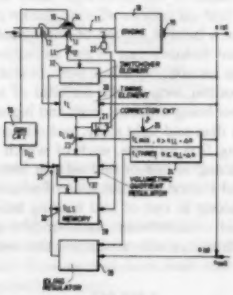
Helmut Denz, Stuttgart, and Hans-Peter Stumm, Tamm, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 326,092

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048626

Int. Cl.³ F02D *33/02*

U.S. Cl. 123—327 **13 Claims**



1. In a regulating device for providing relief regulation in an internal combustion engine, having an intake tube, a throttle device therein, a means for detecting rpm (n), and means for controlling intake air flow, an idling regulator connected to said means for controlling intake air flow, and an engine overrun detection means, the improvement comprising,

means for forming a volumetric quotient (Q/n) where Q is the air throughput in the intake tube,

means for recognizing during engine overrun a threshold value of rpm, $n_{LL}+\Delta n$, where n_{LL} is idle rpm and Δn is a given tolerance value above idle rpm,

means connected to said means for controlling intake air flow and said means for forming a volumetric quotient for regulating said volumetric quotient to a desired minimum rpm dependent value when rpm is above $n_{LL}+\Delta n$, and

means responsive to an output of said recognition means for switching control of said means for controlling intake air flow from said regulating means to said idling regulator.

4,465,044

ELECTRICALLY CONTROLLED FUEL INJECTION PUMP FOR AN INTERNAL COMBUSTION ENGINE

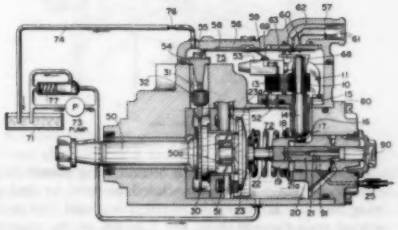
Seishi Yasuhara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 12, 1982, Ser. No. 348,294

Claims priority, application Japan, Feb. 13, 1981, 56-18930

Int. Cl.³ F02D *1/04, 1/06*

U.S. Cl. 123—357 **5 Claims**



1. An electrically controlled fuel injection pump for an internal combustion engine, comprising:

(a) a fuel distributing piston;

(b) a movable collar cooperating with the fuel distributing piston for determining the rate of fuel injection into the engine in accordance with the position of the collar;

(c) an electromagnet having a movable armature;

(d) means engaging both of the collar and the armature for moving the collar in accordance with movement of the armature;

(e) a signal generator associated with the armature for sensing the position of the armature and outputting a signal indicative thereof;

(f) a transducer for sensing the power output required of the engine and outputting a signal indicative thereof;

(g) a control circuit connected to the signal generator and the transducer for receiving the output signals therefrom, the control circuit being also connected to the electromagnet for driving the electromagnet and thereby adjusting the position of the armature in response to the output signals from the signal generator and the transducer, whereby the control circuit drives the electromagnet by means of feedback control so as to control the rate of fuel injection into the engine in response to the power output required of the engine; and

(h) a damper connected to the armature for providing resistance to the movement of the armature, the damper including a casing, a damper piston slidably disposed in the casing in such a manner as to define a chamber inside the casing, an operating rod slidably passing through the damper piston and connected to the armature, a snap ring mounted on the operating rod, a spring seat mounted on the operating rod, and a spring provided between the damper piston and the spring seat so as to press the damper piston against the snap ring, the damper piston having an orifice through which the chamber communicates with the outside of the casing, whereby the operating rod is permitted to move separately from the damper

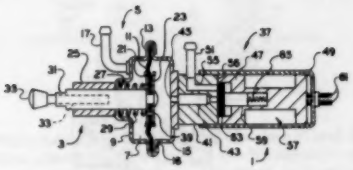
piston when moving in one direction and moves integrally with the damper piston when moving in the other direction.

4,465,045

PULSED BLEED AIR THROTTLE POSITION CONTROLLER

Steven R. Bollinger, Creve Coeur, and Thomas D. Vaughn, Ballwin, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Aug. 6, 1982, Ser. No. 405,999
Int. Cl.³ F02D *9/02*
U.S. Cl. 123—360 **4 Claims**



1. Apparatus for use with a carburetor mounted on an internal combustion engine to control the idle speed of the engine, the carburetor having a throttle valve mounted on a rotatable shaft to one end of which is secured a lever for rotating the shaft and moving the throttle valve, the apparatus comprising:

means contacting the lever to limit movement of the lever in one direction and to move the lever in the opposite direction thereby to control the position of the throttle valve when the engine is idling;

guide means for guiding movement of the contact means;

vacuum means operating under vacuum pressure for maintaining the contact means at one position and for moving the contact means from one position to another, the vacuum means including a chamber exposed to vacuum; and

electrical means for bleeding air to the chamber to modulate the vacuum pressure therein, the electrical means including an air passage communicating with the chamber and means controlling flow of air through the passage thereby to maintain the vacuum in the chamber at one level and to change it from one level to another, the electrical means including an air flow block having a central bore therein with flow restrictions at each end of the central bore, and a passage for introducing outside air into the apparatus, the outlet of the passage and the inlet of the central bore being in a common wall of the air flow block.

4,465,046

METHOD AND APPARATUS FOR CONTROLLING THE COMBUSTION PROCESS OF AN INTERNAL COMBUSTION ENGINE

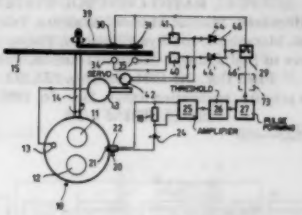
Michael G. May, CH-1180 Rolle, Bel Air, Switzerland

Filed Oct. 19, 1981, Ser. No. 312,481
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1980, 3039338; Sep. 30, 1981, 3139000
Int. Cl.³ F02D *33/00*; F02P *5/14*
U.S. Cl. 123—425 **14 Claims**

1. A method for regulating operating parameters of an internal combustion engine having at least one combustion chamber being provided with ignition means responding to one of said parameters, wherein a combustible charge is ignited by said ignition means and thereafter burns progressively to originate a moving flame-front, comprising the steps of

sensing the flame-front arrival independently of at least one of initiation and duration of said flame-front within said combustion chamber in the end-gas zone of said progressively burning combustible charge, said end-gas zone being defined as that area of said charge which is ignited by said flame-front after a predominate part of said charge has burned,

detecting a deviation between the value of said arrival and a



set-point value independently of at least one of initiation and duration of said flame-front, and

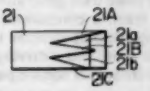
controlling at least one of said engine operating parameters in response to said deviation.

4,465,047

KNOCK DETECTING APPARATUS FOR COMBUSTION ENGINES

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 95,307, Nov. 19, 1979, Pat. No. 4,341,189.
This application Mar. 22, 1982, Ser. No. 360,688
Claims priority, application Japan, Jun. 4, 1979, 54-70494
Int. Cl.³ F02P *5/04*; G01D *21/00*
U.S. Cl. 123—425 **2 Claims**



1. A knock detecting apparatus for an internal combustion engine comprising:

a housing secured to said combustion engine;

a permeable core arranged in secured relation to said housing;

a magnet for generating magnetic flux;

a single vibrating plate of a magnetic material branched into a plurality of vibrating reeds having different lengths, adjacent ones of said reeds being separated by a recess in said vibrating plate from one end thereof, said vibrating reeds being integral at the other end of said vibrating plate and having respective resonance characteristics in different frequency bands within a frequency range of the knocking of said combustion engine,

said recess includes one portion near the edge of said plate of a rectangular shape and another portion adjacent said one portion and on the side of said one portion opposite the edge of said plate, said another portion being a circular shape, said another portion having a diameter larger than the width of said one portion,

said other end of said vibrating plate being fixed to one end of said permeable core through said magnet and said one end of said vibrating plate being spaced from the other end of said permeable core to define respective variable air gaps,

said plurality of vibrating reeds and said respective variable air gaps forming different magnetic paths for the magnetic flux which further passes through said permeable core and said magnet; and

a coil wound on said permeable core for generating electric signals in response to changes in the magnetic flux passing

through said core caused by respective changes in said variable air gaps.

4,465,048

AIR-FUEL RATIO CONTROL SYSTEM

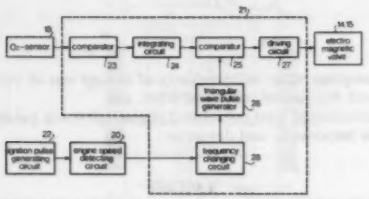
Takuro Morozumi, Mitaka; Mitsuo Nakamura, Tokyo; Masaaki Ohgami, Musashino, and Ryuji Kataoka, Tokyo, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 333,223

Claims priority, application Japan, Dec. 26, 1980, 55-189096

Int. Cl.³ F02M *7/24*

U.S. Cl. 123—440 **17 Claims**



1. In an air-fuel ratio control system for an internal combustion engine with an ignition device, an induction passage, a carburetor communicating with the induction passage, an on-off type electromagnetic valve for correcting the air-fuel ratio of air-fuel mixture supplied to said carburetor, an O_2 sensor for detecting oxygen concentration of exhaust gases from the engine, and a feedback control circuit responsive to the output of said O_2 sensor for producing driving pulses to drive said electromagnetic valve for correcting the air-fuel ratio, said feedback control circuit including an integrating circuit, a triangular pulse train generating circuit for producing a triangular pulse train, a comparator for producing square pulses by comparing the output of the integrating circuit with the triangular pulse train, and a driving circuit for producing said driving pulses from said square pulses, the improvement comprising

an engine speed detecting circuit means for producing an output signal varying in proportion to the engine speed; and

a frequency changing circuit means electrically connected to said feedback control circuit and to said engine speed detecting circuit means for changing the frequency of said driving pulses for the drive of said electromagnetic valve so as to prevent resonance of vibration of the electromagnetic valve caused by operation of the electromagnetic valve with vibration caused by other influences thereon including operations of the engine.

4,465,049

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES, IN PARTICULAR DIESEL ENGINES

Konrad Eckert; Max Straubel, and Wilhelm Vogel, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

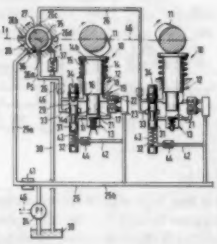
Filed Jan. 12, 1981, Ser. No. 223,953

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000960

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **8 Claims**

1. A fuel injection apparatus for internal combustion engines, in particular Diesel engines, including per engine cylinder one mechanically driven pump piston of an injection pump supplied with fuel by a low pressure line from a supply pump and preferably combined with the injection nozzle to form a pump-/nozzle unit, each said pump/nozzle unit having one control slide provided with a pressurized chamber actuatable by a control pressure of a source of control force counter to the force of at least one restoring spring, said control slide being inserted into an overflow line in permanent communication with a work chamber of said pump and arranged to close said overflow line in order to initiate the onset of injection and to open said line in order to terminate the injection, said apparatus further including a common control apparatus for all said injection pumps by means of which control apparatus said control pressure can be exerted via control lines upon said pressure chambers of said control slides, characterized in that said source of control force is embodied by an auxiliary pump, and further that said auxiliary pump includes an auxiliary pump piston disposed in close proximity to said mechanically driven pump piston and driven simultaneously therewith, said auxiliary pump piston having a larger diameter than said pump



piston and arranged to extend into a correspondingly enlarged auxiliary pump chamber, and that said control pressure (p_S) required for actuation of said control slide can be influenced during the compression stroke of said pump piston and said auxiliary pump piston by means of a control device and that during every compression stroke of the auxiliary pump piston the control pressure (p_S) of the control fuel pumped into the pressure chamber of the associated control slide is built up by means of the control device in alternation for controlling the closing position of the control slide which triggers the onset of injection and for the return stroke of the control slide determining the end of injection which is relieved toward a fuel return and said auxiliary pump chamber and said work chamber of said pump piston are connected via filling valves connected with said low-pressure line.

4,465,050

DEVICE FOR ATOMIZING THE FUEL FOR AN INTERNAL-COMBUSTION ENGINE

Toshihiko Igashira, Toyokawa; Michihiro Ohashi, Handa; Hisasi Kawai, Toyohashi; Ken Nomura, Okazaki; Mitiaki Ujihashi, Mishima, and Minoru Iwata, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyoto Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 18, 1982, Ser. No. 379,495

Claims priority, application Japan, May 19, 1981, 56-74101; May 22, 1981, 56-76740

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—472 **10 Claims**

1. A device for atomizing the fuel for an internal combustion engine comprising:

a fuel pump,

an electromagnetic fuel-injection valve connected to said fuel pump,

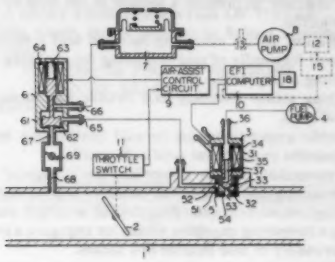
an air-injection port adjoining the injection port of said electro-magnetic fuel-injection valve,

an electromagnetic air flow-controllIng valve connected to said air-injection port, and

an air pump for feeding air to said air flow-controlling valve,

wherein said air flow-controlling valve is controlled in such a manner that the injection of air from said air-injection port takes place simultaneously with the injection of fuel from said fuel-injection valve, and

wherein said fuel-injection valve is located downstream of the throttle valve in the air-intake manifold, and said air flow-controlling valve is of the three-way type, the first way being connected to said air-injection port, the second way being connected to said air pump, and the third way



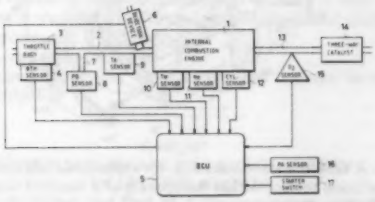
being connected to a port located upstream of said throttle valve, whereby said three-way valve is adapted to operate so as to choose between the passage of air from said air pump to said air-injection port and the passage of air from said upstream port to said air-injection port.

4,465,051

DEVICE FOR INTAKE AIR TEMPERATURE-DEPENDENT CORRECTION OF AIR/FUEL RATIO FOR INTERNAL COMBUSTION ENGINES

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,098
Claims priority, application Japan, Nov. 19, 1981, 56-185764
Int. Cl.³ F02M *51/02*
U.S. Cl. 123—486 **7 Claims**



1. In a fuel supply control system for use with an internal combustion engine having an intake pipe, said system including means for determining a basic value of the air/fuel ratio of an air/fuel mixture being supplied to said engine, as a function of at least one parameter representing operating conditions of said engine, an air/fuel ratio correcting device comprising: a sensor for detecting a value of intake air temperature in said intake pipe of said engine; means for determining a value of a correction coefficient as a function of a value of the intake air temperature detected by said sensor; and means for correcting a basic value of the air/fuel ratio of said air/fuel mixture determined by said basic value determining means, by an amount corresponding to a value of said correction coefficient determined by said correction coefficient determining means; wherein said correction coefficient determining means is adapted to determine the value of said correction coefficient by the following equation:

$$KTA = 1/[1 + CTA(TA - TAO)]$$

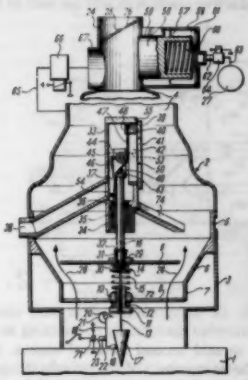
where TA represents a detected value (°C.) of the intake air temperature, TAO a predetermined reference value (°C.) of the intake air temperature, and CTA a constant having a value thereof determined by said engine.

4,465,052

METERING DEVICE FOR GASEOUS PROPELLANT

Erich A. Dolderer, Mösingen, Fed. Rep. of Germany, assignor to Karl Hopt GmbH, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,418
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129191
Int. Cl.³ F02M *21/04*
U.S. Cl. 123—527 **20 Claims**



1. A metering device for gaseous propellant for an internal combustion engine comprising in combination:

a slit carrier through which the gaseous propellant flows,

means for covering at least one slit of said slit carrier in dependence upon flow of another medium,

said means comprising a foil being held under pressure of determined direction against edges of said slit, and further being rigidly secured at a first end adjacent one end of said slit to said slit carrier,

a first member which counteracts said pressure and engages a second end of said foil which is located adjacent a second end of said slit; and

a second member which acts in said determined direction of said pressure, and causes said foil to bear against said edges and is further displaceable along said slit in dependence upon said flow of said other medium.

4,465,053

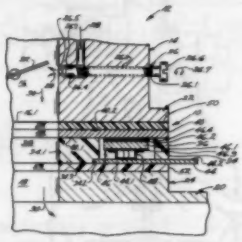
FUEL SYSTEM HAVING LOW PROFILE GASKET HEATER

Peter G. Berg, Attleboro Falls, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 26, 1983, Ser. No. 526,717
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **4 Claims**

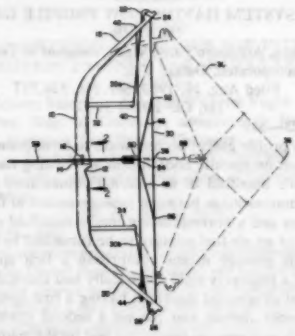
1. A low profile gasket heater means to be disposed between flange means on throttle body means and mating flange means on an intake manifold of an internal combustion engine for sealing communication between passage means in the throttle body means and a corresponding intake manifold opening to permit air or an air-fuel mixture to be furnished to the engine through the passage means comprising a first spacer layer member of a relatively rigid electrically and thermally insulating material of selected thickness having a first opening forming a chamber therein and having a second opening, to be aligned with said passage means and said intake manifold opening, a second heat-transfer layer member of thermally and electrically conductive metal material having an opening

therein aligned with the second opening of the spacer member, the heat-transfer member having one side thereof secured in substantially coextensive, overlying relation to one side of the spacer member to extend over the chamber, first terminal means for electrically connecting the heat-transfer member in an electrical circuit, second electrically conductive metal terminal means embedded in and substantially flush with an outer surface of an opposite side of the spacer member to extend at one end into said chamber and to extend at its opposite end out from a lateral edge of the spacer member to be connected in said electrical circuit, a self-regulating electrical resistance heater of a material of positive temperature coeffecient of resistivity having one side thereof bonded in electrically and thermally conductive relation to said one side of the heat-transfer member to be accommodated in said chamber, spring means in the chamber electrically connecting an opposite side of the heater to said second terminal means, and third and fourth gasket layer members of a relatively thin and compressible electrically insulating gasket material having respective openings therein aligned with the second opening of the spacer member, the third and fourth layer members being secured in substantially coextensive overlying relation to an opposite side of the heat-transfer member and to said opposite side of the spacer member respectively to be disposed in sealing engagement with the respective throttle body flange and mating engine flange means, thereby to dispose the heater compactly and safely between said flange means to be energized for efficiently transferring heat to the throttle body flange means through heat-transfer member.



2.

4,465,054
ARCHERY BOW WITH FLEXIBLE FORCE TRANSMITTING LINK ASSEMBLY
Jim Z. Nishioka, 1268 Hemlock N.W., Salem, Oreg. 97304
Filed May 13, 1982, Ser. No. 377,865
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R **9 Claims**



5. An archery bow comprising

a bow frame portion,

a pair of arms extending oppositely from said frame portion in a rearward direction, said arms having a pair of tip ends and at least one of said arms being flexible to provide tension for said bow,

a bowstring extending between said tip ends for drawing by an operator to provide a tension in the bow to propel a projectile,

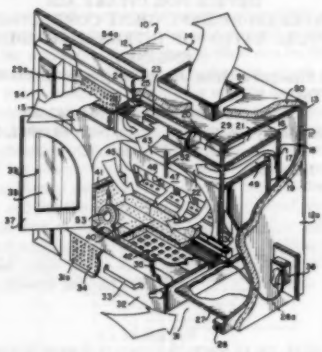
flexible link means extending between said arms and positioned forwardly of said bowstring for engaging and propelling a projectile,

attaching means attaching said flexible link means to said bow arms,

projectile engaging means on said flexible link means for releasable engagement with a projectile,

and connecting means comprising an elongated element connecting said flexible link means to said bowstring, said elongated element extending toward an archer and including a bowstring engaging means for engaging a bowstring rearwardly of said flexible link means.

4,465,055
FIREPLACE STOVE ASSEMBLY
Paul B. Bortz, North Ferrisburg, Vt., assignor to Vermont Stove Company, Inc., Shelburne, Vt.
Filed Dec. 29, 1981, Ser. No. 335,590
Int. Cl.³ F24B 5/02
U.S. Cl. 126—123 **11 Claims**



1. A fireplace stove assembly, for replaceable and operative installation thereof within the opening of a standard fireplace, or the like, comprising:

means defining a chamber, in which to burn combustible products;

said chamber having a grate, on which to support combustible products for combustion side walls and a rear wall rising substantially normal from, and partially circumscribing, said grate; said walls defining a substantially vertical combustion enclosure having a center portion above said grate, and a rear portion adjacent to said grate, within which to accommodate rising smoke and gasses;

first means for introducing unforced ambient air downwardly relative to, and into, said enclosure and having outlets both at said center and rear portions thereof, to force unburned gases, rising within said combustion enclosure, down toward said grate for combustion thereof with any combustible products in combustion on said grate;

said rear wall has a given length, from said grate to an uppermost portion of said enclosure; and further including

conduit means for introducing ambient air into said enclosure at a location intermediate the length of said rear wall;

said first means further comprising conduit means having an opening at one end thereof which is in fluid-flow communication with said first means, and having an opening at

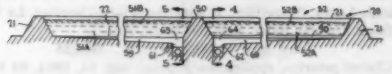
the opposite end thereof which is exposed to said enclosure, and opens thereinto at said intermediate location to admit ambient air into said enclosure thereat.

4,465,056

METHOD AND MEANS FOR REMOVING HEAT FROM A HEAT STORAGE LAYER OF WATER

Chaim Elata, Omer, Israel, assignor to Solmat Systems, Ltd., Yavne, Israel

Filed May 22, 1981, Ser. No. 266,466
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **22 Claims**



1. A method for removing heat from a solar heat storage salt pond of the type having a lower heat storage layer of water covered by an insulating layer, comprising the steps of:

(a) placing a vertical partition in the pond extending from a location on the periphery of the pond toward an opposite peripheral location, but terminating short thereof, for dividing at least the heat storage layer into two interconnected portions;

(b) drawing off water from the heat storage layer in one of said portions;

(c) passing the drawn-off water through a heat exchanger for extracting heat from the water; and

(d) returning the water passed through the heat exchanger to the heat storage layer in the other of said portions.

3. A heat removal system comprising:

(a) a solar heat storage salt pond having given longitudinal and transverse dimensions, and having a heat storage layer of water at the bottom of the pond and an insulating layer at the top, covering the heat storage layer;

(b) a vertical partition in the pond for dividing at least the heat storage layer into two interconnected heat storage portions;

(c) a heat exchanger; and

(d) piping connecting the heat exchanger between the two portions.

4,465,057

COLLECTOR MEANS FOR SOLAR ENERGY COLLECTING SYSTEM

Ronnie D. Nikkel, and Paul M. L'Esperance, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1983, Ser. No. 507,397
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—418 **8 Claims**

1. Collector means for a solar energy collector system including an absorber plate means having at least one side thereof exposed to solar rays, comprising:

(a) a transparent flexible glazing sheet mounted generally parallel to the exposed side of said absorber plate and spaced therefrom;

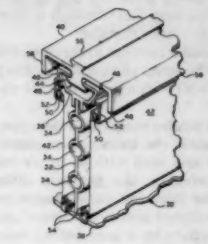
(b) one end of said glazing sheet being detachably coupled to said absorber plate adjacent one edge of said absorber plate.

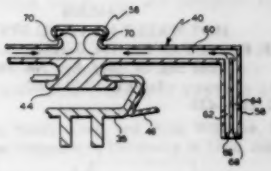
(c) the other end of said glazing sheet comprising a supply roll of glazing sheet material mounted adjacent the other edge of said absorber plate;

(d) whereby fresh glazing sheet material can be withdrawn from said supply roll and mounted parallel to said absorber plate as needed; and

(e) cap means coupled to and extending along one edge of said absorber plate and having a downwardly depending leg extending at least partially over the complimentary edge of said glazing sheet and spaced therefrom;

(f) said cap having formed therein at least one air channel generally conforming in shape to the cross-sectional shape of said cap, including air inlet means adjacent the bottom





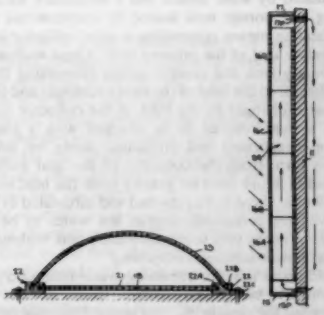
of said leg of said cap and in communication with said channel and air outlet means adjacent the top of said cap and in communication with said channel and adapted to permit currents of cooling air to pass therethrough from said inlet to said outlet.

4,465,058

SOLAR ENERGY AIR-HEATING SYSTEM

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Mamaroneck, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,672
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **12 Claims**



1. A solar-energy air-heating system installable on an exterior wall of a building to heat the air in the interior thereof, said system comprising:

(A) a plurality of open-ended, like modules attachable to said wall in a vertical series arrangement therein to define a series of interconnected air ducts, the number of modules in the series depending on the height of the building, each module being formed by a slab of rigid thermal insulation material having a predetermined length and width, the

upper face of the slab being covered by a mat having a blackened surface to absorb solar energy, and a panel of flexible transparent plastic material having the same length as said slab and a greater width, the edges of said slab being secured to the corresponding edges of the panel by a molding provided with a mounting flange to permit attachment thereof to said wall, whereby the panel forms an arched dome over the slab to create an air duct in which air passing therethrough is heated by heat transferred thereto from the mat;

(B) an inlet header coupled to the open end of the lowermost module in the series and communicating through an opening in said wall with a lower interior zone in said building; and

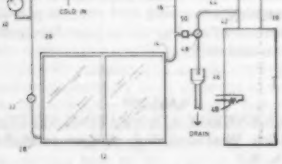
(C) an outlet header coupled to the open end of the uppermost module in the series and communicating through an opening in said wall with an upper interior zone in said building, whereby the pressure differential developed between the inlet and outlet causes air from the lower zone to be drawn into said series of air ducts and to pass therethrough to be heated before being discharged into said upper zone.

4,465,059

HOT WATER HEATING SYSTEM

Roger F. French, P.O. Box 158, Jackson, N.H. 03846

Filed Sep. 18, 1981, Ser. No. 303,468
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **1 Claim**



1. In a domestic hot water heating system for a building adapted to be connected to a source of cold water under pressure, the system having a primary water heating and storage tank heated by solar means and a secondary back-up water heating and storage tank heated by conventional means, the solar heating means comprising a solar collector located at a level below that of the primary tank, a heat exchanger within the primary tank and conduit means connecting the outlet of the collector to the inlet of the heat exchanger and the outlet of the heat exchanger to the inlet of the collector to provide a closed system adapted to be charged with a phase change medium evaporated and circulated solely by solar heat in gaseous form from the collector to the heat exchanger and returned in liquid form by gravity from the heat exchanger to the collector there to be reheated and circulated as before, the improvement permitting surplus hot water to be transfered from the primary tank to the secondary tank without the use of external power sources, comprising

a cold water inlet for admitting water from said pressurized source to said primary tank,

a conduit for conducting hot water from said primary tank to said backup tank,

a water discharge conduit communicating with the interior of said back-up tank for releasing water therefrom,

a pressure-actuated valve in said water discharge conduit, and

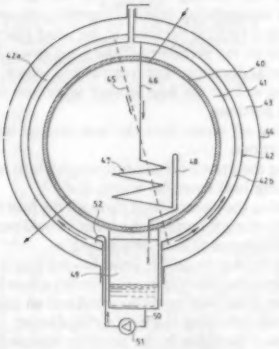
a conduit placing said valve in communication with the gaseous side of said closed system, whereby, when the phase-change medium therein reaches a predetermined pressure said valve will open, whereby water is forced from said back-up tank and replaced by hot water from said primary tank solely by the flow into said primary tank of cold water from said pressurized source.

4,465,060

CURVED HEAT EXCHANGE APPARATUS FOR SOLAR HEATING AND AIR-CONDITIONING OF PREMISES

Claude Leroy, Marseilles, France, assignor to Sorelec, La Matte Saint Euverte Saint Jean de Braye, France

Filed Apr. 7, 1982, Ser. No. 366,255
Claims priority, application France, Sep. 14, 1981, 81 17354
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **2 Claims**



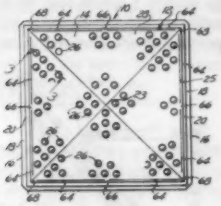
1. A solar energy conversation system comprising an internal enclosure forming a volume for storage of secondary heat exchange fluid; an insulating casing means surrounding said internal enclosure; a heat exchange surface exterior of said insulating casing means; a transparent external casing means enclosing said heat exchange surface; and an internal heat exchanger within said internal enclosure and through which flows primary fluid; said internal enclosure, insulating casing, heat exchange surface and transparent external casing being generally spherical surfaces, said heat exchange surface and said internal heat exchanger forming a primary heat exchange circuit through which flows the primary fluid, the primary heat exchange circuit including a first and second passage formed by said heat exchange surface, means fluidly connecting the first and second passages, the primary fluid being preheated within the first passage by diffuse radiation and being further heated within the second passage by direct radiation, the flow of fluid through the first and second passages being in an upward direction, said second passage having an outlet, said internal heat exchanger having an inlet communicating with the outlet of the second passage and an outlet which includes an inverted U-shaped bend, the U-shaped bend being substantially the internal highest point of the heat exchanger; the primary heat exchange circuit further including a tank into which the inverted U-shaped bend communicates and a circulating pump connected to a lower part of the tank for discharging said primary fluid into a lower part of the first passage, the volume of the tank being greater than the total volume of the primary heat exchange fluid; the tank upper end portion being open to the atmosphere.

4,465,061

SOLAR ENERGY HEATING PANEL

Thomas McMurtrie, 61475 W. Eleven Mile Rd., South Lyon, Mich. 48178

Filed Apr. 19, 1982, Ser. No. 369,740
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—449 15 Claims



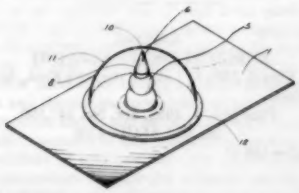
1. A solar energy absorbing panel for converting sun rays into heat, said panel comprising a pan having a sheet metal bottom wall and a peripheral wall, a radially extending flange portion projecting from said pan peripheral wall, and a plurality of dome-like dimples formed out of said bottom wall and projecting from the plane of said bottom wall into said pan, said bottom wall and said dome-like dimples having their surface blackened for absorbing heat energy from said sun rays, wherein said bottom wall, said pan peripheral wall and said flange portion are formed integrally of a single metal sheet, said panel further comprising slits defining heat conveying preventing means between said bottom wall and said flange portion.

4,465,062

NONINVASIVE SEAL FOR A SUCKING CHEST WOUND

Gina Versaggi, 405 Roselawn Blvd., Lafayette, La. 70503, and Anthony St. Germain, 1022 No. David Dr., Abbeville, La. 70510

Filed May 14, 1982, Ser. No. 378,065
Int. Cl.[3] A61M 1/00
U.S. Cl. 128—1 R 1 Claim



1. A noninvasive seal for a sucking chest wound, which comprises:

a. A rectangular flexible base means having an aperture in the center and having its bottom surface covered with a layer of an adhesive material adapted to be adhered to a patient's body in surrounding relationship to the wound;

b. a self-adhering ring seal means securedly attached at the underside of said base means in surrounding relationship to said central aperture and having its inner diameter equal to that of said aperture to further insure a fixed position of said base means in relation to the wound and to further prevent leaking of fluid from the wound and leaking of air into the wound;

c. a one-way check valve means, made of a Teflon-coated rubber, fixedly disposed on said base means, said valve means having its central bore in the registered relationship with said aperture in said base means, said valve means permitting a continuous expellment of air from a chest cavity of the patient exterially through said aperture in the base means and said central bore in said check valve means and prohibiting the intake of air into the chest cavity, said valve comprising a circular flange means horizontally extending from its lowermost portion through the aperture in said base means to the underside of said base means between the bottom surface of said base means and the upper surface of said seal means, the length of said flange means being substantially equal to the width of said ring seal means, said check valve further comprising a body integrally connected to said flange means, said body having a generally polygonal shape, and which terminates in an upper end conical section which is provided with a slot through the top thereof to permit air which has collected in the chest cavity to escape therefrom;

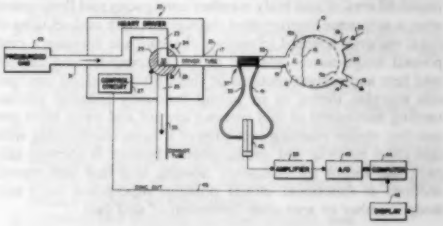
d. a dome shaped, non-collapsible cap means securedly attached to said base means in covering surrounding relationship to said valve means, said cap means having a plurality of apertures adjacent its top portion to facilitate expoundment of air from said chest cavity after the air has passed through a slot in the uppermost portion of said check valve means, and to serve as a protective shield for said wound.

4,465,063

CARDIAC FLOW MEASUREMENT SYSTEM AND METHOD

Steven D. Nielsen, Sandy, Utah, and Peter Willshaw, Buenos Aires, Argentina, assignors to University of Utah, Salt Lake City, Utah

Filed May 25, 1982, Ser. No. 381,965
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—1 D 27 Claims



1. A cardiac flow measurement system for measuring the volume of blood pumped over a specified period of time by a fluid driven artificial ventricle, said ventricle having a first chamber for receiving a drive fluid and a second chamber for receiving blood, said chambers being separated by a flexible diaphragm, and said system comprising:

first means for delivering a drive fluid to said first chamber;

second means through which the drive fluid is removed from said first chamber;

means for alternately (a) establishing a flow path between said first chamber and said first means so as to deliver said drive fluid to the first chamber at time-spaced intervals, and for alternately (b) establishing a flow path between said first chamber and said second means so as to remove the drive fluid from said first chamber at times in between said time-spaced intervals;

means, positioned in one of said flow paths between, for measuring the flow rate of said drive fluid independently of pressure variations which may occur in the flow path of the drive fluid; and

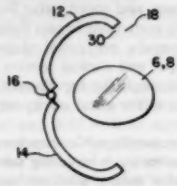
means, connected to said measuring means, for integrating said flow rate over a specified time interval so as to derive the approximate cardiac output of said artificial ventricle during said specified time interval.

4,465,064

ORTHOPEDIC DEVICE AND METHOD FOR SUPPORTING AND TREATING PORTIONS OF THE BODY

Philip Boone, 15 Fenwick Rd., Winchester, Mass. 01890

Filed Feb. 22, 1982, Ser. No. 350,983
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—88 **14 Claims**



1. An orthopedic device or assemblage adapted to rapidly form a cast composed of pivotally interconnected individually movable sections for providing at closed position immobilization and repair of a displaced, fractured or otherwise injured body member or area while permitting at open position direct visual and tactile access to said member or area at all times for inspection and treatment purposes and avoiding cutting of the cast to obtain its removal or in most cases avoiding the need to effect its complete removal during treatment, comprising: a first preferably generally-rectangular cast-producing section composed of a flexible supportive sheet material adapted to be superimposed with and generally conform to the contours of a given impaired area of said body member; a second cast-producing section substantially similar to said first section adapted to be superimposed with and conform to the contours of an impaired area of said body member contiguous said first-named area; a substance impregnated throughout both said sections of sheet material adapted to operate therewith in forming a cast; pivotal hinge means adapted to so interconnect and dispose said first and second sections of sheet material along contiguous margins therof as to permit manually induced pivotal turning movement of said sections toward and away from one another; means enabling provision of a liquid cooperating with said sheet material and impregnated substance in forming said cast; and means for releasably holding said first and second sections at functional closed position superposed with said body member or area after formation of said cast.

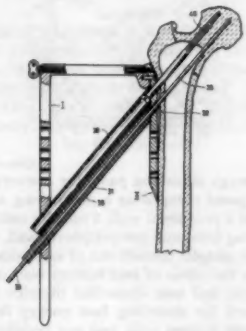
4,465,065

SURGICAL DEVICE FOR CONNECTION OF FRACTURED BONES

Yechiel Gotfried, 10, Ben-Gurion Ave., Kiriat Bialik, Israel

Filed Jan. 7, 1983, Ser. No. 456,403
Int. Cl.³ A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 BB **9 Claims**

1. A surgical device for percutaneous connection of a fractured upper portion of the femur, comprising: at least one long screw for angular insertion into said femur head and at least two shorter screws to be inserted into said femur shaft, each of said screws comprising a head and a screw-threaded shaft; a fixator plate adapted to be fastened to said femur, provided with a screw threaded bore in its head portion which is close to said femur head, with a plurality of bores of a diameter corresponding to said screw shafts, whereof at least one angularly extending bore, intended to receive said long screw, forms an angle of 140°±15° with the plane of said fixator plate, and whereof at least two bores, intended to receive said shorter screws, are perpendicular to the plane of said fixator plate, the lower end of said fixator plate being sharpened in chisel fashion; an auxiliary tool comprising a grip portion substantially parallel to said fixator plate and a connector arm extending from the top of said grip portion to the top of said fixator plate, said connector arm being provided with screw means adapted to engage with said threaded bore in said fixator plate and with means adapted to prevent rotational dislocation of said fixator plate in respect of said connector arm, said grip portion being provided with a plurality of bores coaxially aligned with said bores in said fixator plate after this plate is firmly connected to said auxiliary tool, said bores being of a diameter somewhat larger than the largest diameter of said screw heads; at least two tubular guide assemblies adapted to penetrate through said bores in said grip portion towards said bores in said fixator plate, each assembly comprising an outer guide of an outer diameter corresponding to the diameter of said bores in said



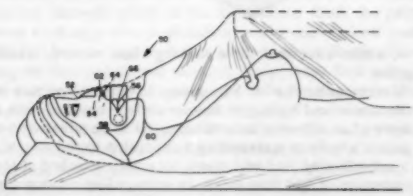
grip portion and an inner diameter permitting the passage therethrough of the heads of said screws, each assembly further comprising an inner guide of an inner diameter permitting the passage therethrough of a small-diameter drill and of an outer diameter corresponding to the inner diameter of said outer guide, the outer diameter of said inner guide being reduced to the diameter of said bores in said fixator plate at its end close to said fixator plate, there being provided at least one long guide assembly adapted for the insertion of said long screw into said femur head, and at least one shorter guide assembly adapted for the insertion of shorter screws into said femur shaft.

4,465,066

SURGICAL DRAPE SUPPORT

Emmett F. Carpel, 2683 E. Lake of the Isles Blvd., Minneapolis, Minn. 55408

Filed Feb. 9, 1982, Ser. No. 347,190
Int. Cl.³ A61B *19/08*
U.S. Cl. 128—132 D **9 Claims**



1. Surgical drape support for supporting a surgical drape over an individual's nose and mouth comprising:

a. means providing for configured three-point support from the bridge of an individual's nose and over and above said nose and mouth of an individual's face including a three-bar T-member support having one leg bar member secured to a substantially mid portion of an elongated bar member of said T; said leg bar member at least of a length

for extending from said bridge to a point at least over said mouth of said individual;

b. means providing for at least-one point support of an end of said leg bar member for positioning at, over and about said bridge of said individual's nose; and,

c. means for adhesively securing each end of said elongated bar member to opposing sides of an individual's cheeks and at least one point about said bridge of said individual's nose whereby said three-bar support provides for support of a surgical drape thereby providing for free, clear and unobstructed passage of air through said individual's nostrils and mouth and preventing said surgical drape from being sucked into the individual's mouth during surgery thereby preventing suffocation.

4,465,067

OXYGEN INSUFFLATION DEVICE

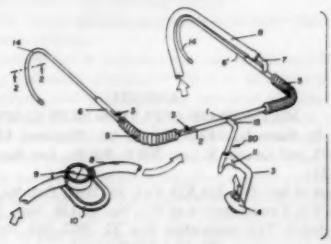
Jochim Koch, Hollenbek, and Wolfgang Drews, Reinfeld, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,981

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215466

Int. Cl.³ A61M *15/08*

U.S. Cl. 128—207.18 **8 Claims**



1. An oxygen insufflation device for wearing on the head of a person comprising a head engaging frame including a tubular front portion (2), a first tubular flexible link (5) connected to one side of said front portion, a second tubular flexible link connected to an opposite side of said front portion, a first tubular temple portion (6) having a first ear-engaging part (14) at one end thereof and connected to said first flexible link at an opposite end of said first tubular temple portion, a second tubular temple portion (6) having a second ear-engaging part (14) at one end thereof and connected to said second flexible link at an opposite end of said second temple portion, a tubular member (13) connected to said tubular front portion at a location intermediate of said one and said opposite side of said tubular front portion, said tubular member having a selected length and connected to said tubular front portion at one end thereof, a nose seat (11) connected to said tubular member at an opposite end thereof, said nose seat shaped to have opposite sides adapted for engaging the bridge of a person's nose, a flexible tubular nose connection (3) connected to one of said opposite sides of said nose seat, a hollow nose plug connected to said flexible tubular nose connection at an end of said flexible tubular nose connection remote from said nose seat, said flexible tubular nose connection having a length so that with the nose seat engaged on the bridge of a person, the nose plug is engaged in one nostril of the person, and a gas connection (7) connected to said first tubular temple portion for supplying breathing gas to said first tubular temple portion, through said first tubular flexible link, said tubular front portion, said tubular member and said flexible tubular nose connection to said hollow nose plug, said selected length of said tubular member being chosen to maintain said front portion above the eyes of a person when said nose seat is engaging the bridge of the person's nose.

4,465,068

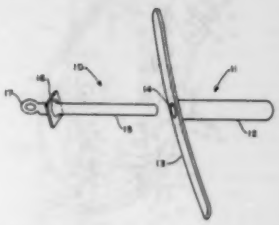
METALLIC AID AND TECHNIQUE IN FITTING VOICE PROSTHESIS

Evangeline Cantu, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 2, 1982, Ser. No. 394,945

Int. Cl.³ A61B *17/00;* **A61F** *1/20*

U.S. Cl. 128—303 R **7 Claims**



1. A device for fitting a voice prosthesis to a post-laryngectomy patient having a tracheostoma for receiving said prosthesis, comprising:

a. a hollow, generally tubular housing, conforming in outer surface contour to taht of said prosthesis, for insertion into said tracheostoma;

b. a solid, substantially radiographically opaque, generally cylindrical metallic member having a body portion of outer surface contour conforming to the inner surface contour of said housing and insertable into said housing; and

c. means for positioning said member and said housing within the trachea of said patient for viewing using radiographic means.

5. A technique for fitting a voice prosthesis to a post-laryngectomy patient having a trachemostoma for receiving said prosthesis, comprising the steps of:

a. providing a hollow, generally tubular housing, conforming in outer surface contour to that of said prosthesis;

b. inserting said housing into said tracheostoma;

c. providing a solid, substantially radiographically opaque, generally cylindrical metallic member having a body portion of outer surface contour conforming to the inner surface contour of said housing;

d. inserting said member into said housing; and

e. determining the position of said housing and said member within the trachea of said patient using radiographic means.

4,465,069

CRANIAL INSERTION OF SURGICAL NEEDLE UTILIZING COMPUTER-ASSISTED TOMOGRAPHY

Jean Y. Barbier, 7532 Warner Ave., St. Louis, Mo. 63117, and Christopher J. Moran, 12559 Amersham Ct., St. Louis, Mo. 63141

Continuation of Ser. No. 270,404, Jun. 4, 1981, abandoned, which is a division of Ser. No. 111,892, Jan. 14, 1980, Pat. No. 4,360,028. This application Jun. 20, 1983, Ser. No. 505,893

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—303 B **5 Claims**

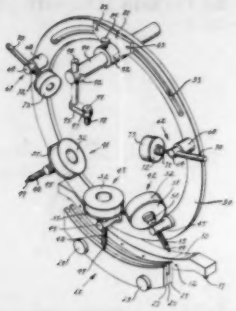
1. Apparatus for use in guidance of insertion of surgical instruments into a patient's body by use of computer-assisted tomography equipment which provides a plurality of scans in parallel planes, including a scanning throat and a body-supporting cradle axially positionable relative thereto, the apparatus comprising

frame-like patient restraint means including means for rigid securement to the body-supporting cradle and having an arcuate track portion in a plane parallel to the planes of such scans,

said frame-like means being smaller in its outer dimension than the scanning throat, and

surgical instrument support structure mounted adjustably along the arcuate track portion and projecting away from the plane thereof and including

an instrument guide-holder having bore means adjustably



securable in a plane parallel to such plane, to slidably accept such a surgical instrument, said guide-holder and that portion of the instrument support structure adjacent thereto being constructed of material having a density substantially of the order of that of body tissue,

whereby the guide-holder and the axis of its bore means may be shown on such a computer assisted tomography scan.

4,465,070

STITCHING FORMATION BY A SUTURING INSTRUMENT

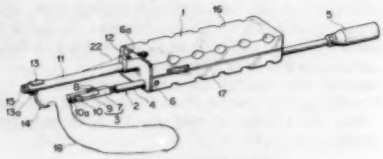
Yasukata Eguchi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

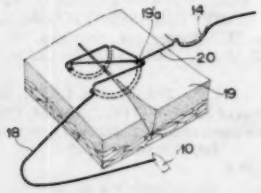
Filed Feb. 12, 1982, Ser. No. 348,457

Claims priority, application Japan, Apr. 14, 1981, 56-54975

Int. Cl.³ A61B *17/04*; D05B *97/00*

U.S. Cl. 128—334 R **2 Claims**





1. A method of suturing cut edges of human parts in a surgical operation by means of a suturing instrument having a curved needle with a needle eye carrying a needle thread and a shuttle carrying a shuttle thread and adapted to reciprocate towards and from the curved needle, wherein lock stitches are formed by penetrating the curved needle into human parts through needle penetrating holes and needle-getting-out holes arranged in pairs at opposite sides of the cut edges and crossing the needle thread and the shuttle thread at said needle-getting-out holes by reciprocating movement of the shuttle and pulling the needle out from said needle penetrating holes, the method comprising the steps of crossing said needle thread with said shuttle thread at a one needle-getting-out hole of one pair of said holes, continously traversing the cut edges of human parts in an oblique direction to the cut edges of human parts with said shuttle thread from said one needle-getting-out hole to a needle penetrating hole of the next pair of said holes displaced a distance from said one pair of holes wherein the needle penetrating holes of said one pair and said next pair of holes are disposed on the same side of the cut edges of human parts, passing said shuttle thread outside and around said needle thread at the needle penetrating hole of said nest pair of holes and traversing the cut edges of human parts at a right angle to the cut edges of human parts with said shuttle thread from said needle penetrating hole of said next pair of holes to a needle getting-out hole of said next pair of holes displaced a distance from said needle getting out hole of said one pair of holes to form a lock stitch wherein said both needle getting out holes of said one pair and said next pair of holes are disposed on the same side of the cut edges of human parts and opposite to the side of the cut edges of human parts containing said both needle penetrating holes of said one pair and next pair of holes.

4,465,071

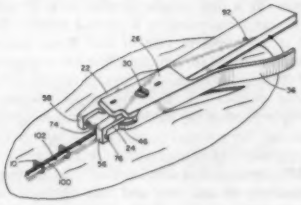
METHOD OF APPLYING SKIN CLIPS

Peter B. Samuels, 14708 Sutton St., Sherman Oaks, Calif. 91403, and George S. Lee, 700 E. 9th St., Los Angeles, Calif. 90021

Division of Ser. No. 314,533, Oct. 26, 1981, Pat. No. 4,399,810, which is a continuation of Ser. No. 98,128, Nov. 28, 1979, abandoned. This application Sep. 22, 1982, Ser. No. 421,121

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—335 **2 Claims**



1. A method of joining skin tissue together with reduced trauma comprising the steps of:

(a) everting the skin tissue to be joined at the edges thereof;

(b) placing over the tissue a skin clip which comprises a deformable wire-like member initially configured to include a bail portion and arms initially extending angularly downwardly and outwardly from the bail portion and finally downwardly and inwardly in an end portion remote from the bail portion, the ends of the arms being formed to piercing points over the everted tissue;

(c) applying the clip to the tissue solely by lateral deformation of the clip;

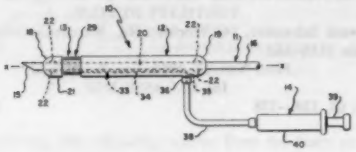
(d) repeating steps (b) and (c) at selected intervals along the length of the tissue to be joined;

(e) releasing the skin tissue from the everted position to permit the edges thereof to move into abutting relation held in place by said clips.

4,465,072
NEEDLE CATHETER

Syde A. Taheri, 268 Dan Troy Dr., Williamsville, N.Y. 14221

Filed Feb. 22, 1983, Ser. No. 468,076
Int. Cl.³ A61M 25/00
U.S. Cl. 128—348.1 7 Claims



1. A needle catheter, comprising:

a needle having a sharpened forward end;

a sleeve mounted on the needle for movement therewith, said sleeve having a forward end arranged rearwardly of said needle forward end, having a distal rearward end, having an inner surface arranged to face the outer surface of said needle, and having an outer surface arranged to face away from said needle outer surface;

a key-keyway connection between said needle and sleeve to prevent relative rotation therebetween;

an annular recess extending radially into said sleeve from said outer surface;

a balloon mounted on said sleeve in said recess, said balloon having a plurality of abrasive burrs on its outwardly-facing surface, said balloon being movable between a deflated position at which said balloon does not extend radially outwardly beyond said sleeve outer surface, and an inflated position at which said balloon does extend radially outwardly beyond said sleeve outer surface;

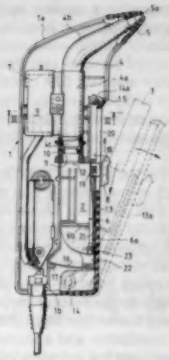
passageway means forming a passageway along said sleeve, said passageway having one end communicating with the interior of said balloon, and having another end opening onto said sleeve outer surface proximate said distal end thereof; and pump means communicating with the interior of said balloon through said passageway, and selectively operable to inflate and deflate said balloon.

4,465,073
APPLIANCE FOR WAX DEPILATION, ESPECIALLY FOR FACIAL USE

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Dec. 1, 1981, Ser. No. 326,397
Claims priority, application France, Dec. 12, 1980, 80 26370
Int. Cl.³ A61B 17/00
U.S. Cl. 128—355 7 Claims

1. In an appliance for wax depilation comprising a tubular duct (4) for receiving a block of wax (3) communicating with a nozzle (5) having an opening at the exterior of the appliance, said nozzle being adapted to be moved in close proximity to the user's skin, heating means (7) adjacent to the tubular duct (4) for melting wax (3) within said duct (4), and movable means (6*b*) to bear against the rear face of the block of wax (3) to push the latter toward the nozzle (5); the improvement in which said movable means are arranged in a magazine (2) and are comprised by a heel plate (6*b*) fixed to a carriage (6), said appliance comprising further a lateral cover (13) for closing said magazine and for introducing into said magazine a block of wax, a casing which contains said magazine, said cover being pivotally mounted on said casing, the cover supporting and guiding said carriage during movement of the carriage toward the nozzle, and means carried by the cover outside the cover for moving the carriage toward the nozzle.



4,465,074
METHOD OF APPLYING AN ELECTRODE TO THE SKIN OF A PATIENT

Gilbert Buchalter, 28 Mountainview Rd., Millburn, N.J. 07041

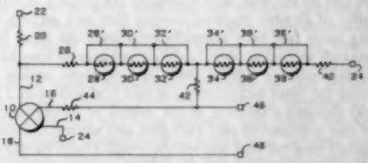
Filed Apr. 20, 1982, Ser. No. 370,278
Int. Cl.³ A61B 5/04
U.S. Cl. 128—639 15 Claims

1. A method for applying a plurality of electrodes to the skin of a patient, said method comprising the steps of applying a thin film of a physiologically compatible conductive liquid to the skin of said patient, said film being of sufficient thinness so that electrical signals will be conducted through the thickness direction of said film to an electrode attached to said skin but so that there will be substantially no conductance of said electrical signals along the surface direction of said film; and applying a plurality of electrodes to said skin via said thin film at a sufficient distance from one another so that there is substantially no conductance between said electrodes through said film.

4,465,075
ON-CHIP PRESSURE TRANSDUCER AND TEMPERATURE COMPENSATION CIRCUIT THEREFOR

Craig C. Swartz, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1982, Ser. No. 363,177
Int. Cl.³ A61B 5/02
U.S. Cl. 128—672 8 Claims



7. An integrated circuit having a first and a second voltage conductor and a first and a second circuit output conductor, for measuring blood pressure, comprising:

a pressure transducer having first and second pressure transducer input conductors and first and second pressure transducer output conductors, said second pressure trans-

ducer input conductor coupled to said second voltage conductor, said second pressure transducer output conductor coupled to said second circuit output conductor, said pressure transducer sensing said blood pressure and providing a representative voltage at said first and second pressure transducer output conductors;

a first resistor coupled between said first pressure transducer output conductor and said first circuit output conductor;

means coupled to said first voltage conductor and said first pressure transducer input conductor for adjusting the span of the output at said first and second circuit output conductors;

means for adjusting the offset at said first and second circuit output conductors including a first offset means coupled between said first pressure transducer input conductor and said first circuit output conductor and a second offset means coupled between said first circuit output conductor and said second voltage conductor; and

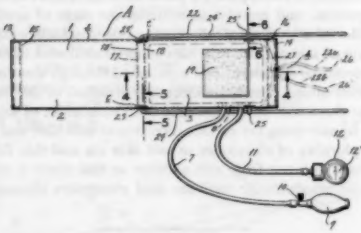
means for temperature compensating the offset including a first temperature compensation means coupled between said first pressure transducer input conductor and said first circuit output conductor and a second temperature compensation means coupled between said first circuit output conductor and said second voltage conductor.

4,465,076

SELF-APPLYING ACCESSORY FOR BLOOD PRESSURE CUFF

Harvey H. Sturgeon, Rte. 0, New Florence, Mo. 63363

Filed Jul. 6, 1982, Ser. No. 395,738
Int. Cl.³ A61B 5/02
U.S. Cl. 128—686 **6 Claims**



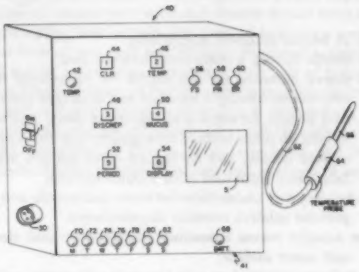
1. In a blood pressure cuff comprising first and second flexible section having opposed side edges, inner end portions, and outer free ends, means securing said cuff sections at their inner end portions in end to end relationship for disposition between a coplanar extended inoperative condition and overlapping, encircling disposition about a patient's arm, first and second cooperative fastener components provided respectively upon said first and second cuff sections for interengagement for maintaining said cuff in operative disposition, the improvement comprising an accessory for facilitating operative disposition of the cuff by the user, said accessory comprising an elongated member of flexible material having first and second lengths having outer free ends normally proximate the outer free end of said cuff second section, said first and second lengths of said elongated member having inner end portions, means fixedly securing the inner end portions of said first and second lengths of said elongated member in the region of securement of the inner end portions of said cuff first and second sections, said elongated member first and second lengths each having central portions between the respective fixed inner end portions and outer free ends thereof located adjacent the side edges of said cuff second section when said cuff is in an inoperative state, the outer free ends of the first and second lengths of the elongated member being mutually secured proximate the free end of said cuff second section, and guide means provided on said cuff second section for the adjacent central portions of said first and second lengths of the elongated member, said guide means being located between the inner end portion and outer free end of said second cuff section for permitting relative movement between said second section and said elongated member during disposition of the cuff into operative position.

4,465,077

APPARATUS AND METHOD OF DETERMINING FERTILITY STATUS

Howard Schneider, 149 Finchley Rd., Montreal, Quebec, Canada H3X 3A3

Filed Nov. 12, 1981, Ser. No. 320,227
Int. Cl.³ A61B 5/00
U.S. Cl. 128—738 **14 Claims**



1. A fertility computer comprising:

(a) storage means for storing data indicating:

(i) the day of the week, DW;

(ii) the day of a menstrual cycle, DC;

(iii) a user's average cycle length, CL;

(iv) the day of a menstrual cycle in which mucus change occurred, DM;

(v) the relative value of the change in (iv);

(vi) a plurality of the most recent Basal Body Temperature (BBT) readings of the user T(1)–T(N);

(vii) the number of menstrual cycles in which the computer has been used by the user, CN; and

(viii) a plurality of discrepancy indicators F1–F(n);

(b) data processing means for utilizing the above data to provide an indication to the user of current fertility status;

(c) switch means operable by a user for inputting data with respect to a user's menstrual cycle parameters, basal body temperature, and physical disturbances into said data processing means;

(d) a temperature sensor for producing an analog temperature signal indicative of the user's basal body temperature;

(e) converter means for converting said analog signal to a digital signal; and

(f) display means for displaying to the user whether of not the temperature sensor is in a functional position and when it is permissible to remove the sensor from the functional position.

4,465,078

METHOD FOR CELL SAMPLING IN A BODY CAVITY

Patrick R. Manning, Oakbrook, and Donald W. West, Lake Forest, both of Ill., assignors to Medtest Corporation, Lake Forest, Ill.

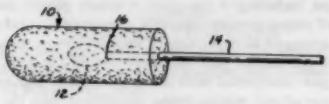
Filed Sep. 30, 1982, Ser. No. 429,689
Int. Cl.³ A61B 10/00
U.S. Cl. 128—759 **8 Claims**

1. A method for collecting cells from a body cavity for cytodiagnosis, which comprises the steps of:

(a) inserting into the body cavity an absorbent carrier having a rupturable sac of sterile fluid contained therein;

(b) puncturing the rupturable sac of sterile fluid after insertion;

(c) translating or rotating the absorbent carrier with respect to the body cavity thereby depositing on the absorbent carrier cells from the body cavity thereby forming a cell-laden carrier;



(d) removing the cell-laden carrier from the body cavity; and

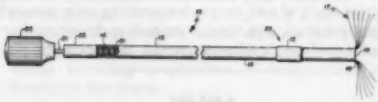
(e) transferring the cells from the cell-laden carrier to a medium for cytodiagnosis.

4,465,079

BIOMEDICAL LEAD WITH FIBROSIS-INDUCING ANCHORING STRAND

Eugene A. Dickhudt, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 13, 1982, Ser. No. 434,032
Int. Cl.³ A61H *1/04*
U.S. Cl. 128—785 **7 Claims**



1. A biomedical stimulation lead for implantation in a living body, of the type having a lead body having a proximal end and a distal end, an exposed electrode, an electrical conductor connected to said electrode and a sheath of a material which is generally inert to body fluids, said lead further comprising:

fixation means extending from said lead body from a location near the distal end of said lead body for holding said electrode in position within said living body, said fixation means comprising a plurality of strands having a first end attached to said lead body and a second end extending from said lead body and formed of a material which enhances fibrotic growth, and being sufficiently pliant to pull out of fibrotic material along the paths defined by the positions of said strands in said fibrotic material, whereby said lead may be removed from said living body with relatively minor trauma to body tissues.

4,465,080

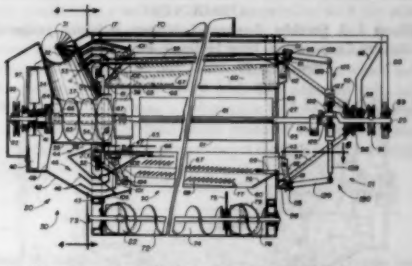
OSCILLATING MECHANISM FOR ROTARY CLEANING DEVICE

Frans J. G. C. De Coene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,983
Int. Cl.³ A01F *12/44*
U.S. Cl. 130—27 AA **19 Claims**

1. In a rotary cleaning mechanism for cleaning threshed grain in a combine harvester, said cleaning mechanism having a frame; a cleaning cylinder mounted on said frame and rotatable about an axis of rotation, said cleaning cylinder including a subframe and a plurality of elongated cleaning shoes circumferentially spaced about the periphery of said cleaning cylinder, each said cleaning shoe having at least one sieve mounted therein for the passage of cleaned grain therethrough, said cleaning shoes being mounted on said subframe for movement in a generally axial direction; oscillating means for reciprocatably moving said cleaning shoes along said generally axial direction; and drive means for rotatably driving said cleaning cylinder, an improved oscillating means comprising:

linkage means interconnecting each said cleaning shoe for transferring reciprocating movements to the respective said cleaning shoes in a timed sequence relative to one another; and



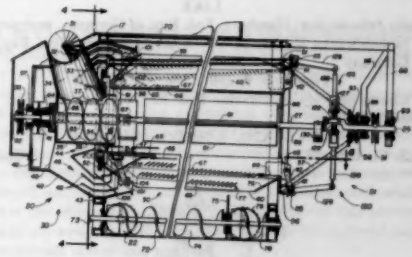
actuating means operatively connected to said linkage means to effect a reciprocating movement of said linkage means in a timed sequence such that the number of cleaning shoes being moved axially forward is equal to the number of cleaning shoes being moved axially rearward to counterbalance the reciprocating movements of said cleaning cylinder.

4,465,081

FAN FOR ROTARY CLEANING MECHANISM IN COMBINE HARVESTERS

Frans J. G. C. Decoene, and Gilbert J. I. Strubbe, both of Zedelgem, Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,984
Int. Cl.³ A01F *12/48*
U.S. Cl. 130—27 HF **22 Claims**



1. In a rotary cleaning mechanism for cleaning threshed grain in a combine harvester, said cleaning mechanism having a frame; a cleaning cylinder mounted on said frame for rotation about an axis of rotation, said cleaning cylinder including sieve means for permitting the passage of clean grain therethrough, said sieve means being spaced radially outwardly from said axis of rotation to define an axial opening through said cleaning cylinder; an infeed mechanism mounted on said frame forwardly of said cleaning cylinder and being operable to feed threshed grain into said axial opening, said infeed mechanism having an infeed housing within which said threshed grain is conveyed; fan means mounted on said frame proximate to said cleaning cylinder to create a flow of air through said sieve means to urge unwanted residue in said threshed grain into an airborne state for discharge from said cleaning cylinder; and drive means for operatively powering the rotation of said cleaning cylinder, said infeed mechanism and said fan means, an improved fan means comprising:

a fan mounted on said axis of rotation forwardly of said

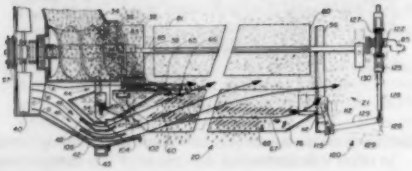
infeed mechanism to blow air rearwardly around said infeed mechanism and through said cleaning cylinder to clean unwanted residue from the threshed grain on said sieve means.

4,465,082

IMPELLER FOR ROTARY CLEANING MECHANISM IN COMBINES

Gilbert J. I. Strubbe, Loppem-Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 17, 1982, Ser. No. 408,985
Int. Cl.³ A01F *12/30*
U.S. Cl. 130—27 E **7 Claims**



1. In a rotary cleaning mechanism for cleaning threshed grain in a combine harvester, said cleaning mechanism having a cleaning cylinder rotatable about an axis of rotation and reciprocable relative to said axis of rotation, said cleaning cylinder including sieve means spaced radially outwardly from said axis of rotation to define an axial opening through said cleaning cylinder, said sieve means having an axial length and drive means for rotatably powering said cleaning cylinder, the improvement comprising:

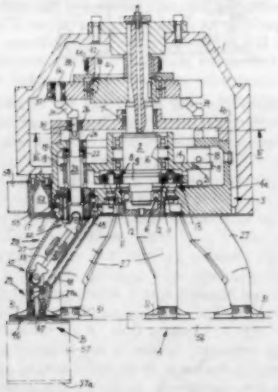
an impeller rotatably mounted within said axial opening in said cleaning cylinder to deflect grain radially outwardly onto said sieve means.

4,465,083

TRANSFER APPARATUS FOR CIGARETTES OR THE LIKE

Peter Schumacher, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. K.G., Hamburg, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 271,834
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022885
Int. Cl.³ A24C *5/00, 5/32, 5/33, 5/35*
U.S. Cl. 131—282 **5 Claims**



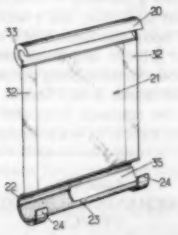
1. Apparatus for transferring cigarettes or analogous rod-shaped articles between a first station at which the articles move axially at a first speed and a second station at which the articles move sideways at a different second speed, comprising a plurality of article receiving devices; means for moving said devices along an endless path a portion of which extends from one of said stations to the other of said stations so that the devices can accept articles at said one station and deliver the articles to said other station, comprising at least one planetary transmission including a sun gear, a rotary planet carrier, a plurality of planet pinions rotatably supported by said carrier and each arranged to move one of said devices in response to rotation of said carrier with reference to said sun gear, and at least one gear interposed between said sun gear and said pinions, the axes of said pinions being equidistant from the axis of said carrier; a plurality of crank arms, one for each of said devices, each of said crank arms receiving torque from one of said planet pinions and rotatably supporting the respective device, said devices being rotatable in the respective crank arms about axes which are spaced apart from the axes of the respective pinions; means for preventing changes in orientation of said devices, at least druing travel along said portion of said path, comprising a discrete crank unit, a discrete shaft and a discrete torque transmitting unit for each of said devices, said torque transmitting units being disposed between said crank units and the respective devices, said shafts being coaxial with the respective pinions and each of said crank units comprising a first crank pin coaxial with and arranged to rotate the respective shaft, a second crank pin eccentric with reference to the first crank pin and a crank arm intermediate said crank pins, said first crank pins being rotatably journalled in said carrier; and means for orbiting said second crank pins about the axis of said carrier, each of said torque transmitting units connecting the respective shaft with the corresponding device so that the latter is rotatable with reference to the corresponding pinion.

4,465,084

PROTECTIVE DEVICES FOR PERMANENTLY WAVING SOLELY IN THE VICINITY OF THE ROOT OF A HAIR

Jean-Claude Fulgoni, 16, avenue de Longchamps, 92210 Saint Cloud, France

Filed Jan. 24, 1983, Ser. No. 460,270
Claims priority, application France, Jan. 29, 1982, 82 01477
Int. Cl.³ A45D *2/02*
U.S. Cl. 132—39 **12 Claims**



1. A protective device for permanently waving a hair solely in the vicinity of the root thereof and for protecting from the action of the permanent-wave product the part of the hair not situated in the vicinity of the root, comprising:

a rigid or semi-rigid part (**20**) having a curved gutter shape,

a flexible and impermeable sheet (**21**) substantially quadrangular in shape, a first edge of which is firmly attached to said rigid part,

and an absorbent part (**23**) adapted to absorb the permanent-wave product, firmly attached to a second edge of the flexible sheet opposite said first edge,

characterized in that between the flexible sheet (**21**) and the absorbent part (**23**) there is inserted a second rigid or semi-rigid part (**22**) having a curved gutter shape firmly attached by one

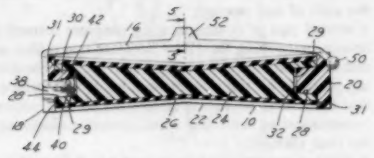
of its edges (first edge) to the flexible sheet and carrying, firmly attached along its opposite edge (second edge), the absorbent part (23), and in that the second rigid part (22) has, at or in the region of its two lateral ends, respectively two fastening clips (24) extending over an arc of a circle through at least 180° and formed from a resiliently deformable material.

4,465,085

PERMANENT WAVE ROD

James L. Schopieray, 4197 Brammer Dr., Traverse City, Mich. 49684, assignor to James L. Schopieray and Thomas E. Smith, both of Rapid City, Mich.

Filed Feb. 22, 1979, Ser. No. 14,244
Int. Cl.³ A45D *2/14*
U.S. Cl. 132—42 A **7 Claims**



1. A permanent wave rod comprising a generally oblong rod and a strap extending from one end of the rod, the strap being adapted for attachment to the other end of the rod,

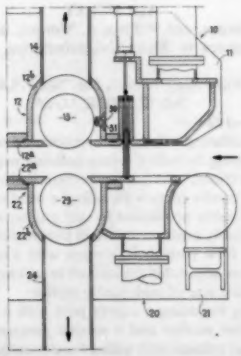
a central portion of the rod comprising a central core of substantially rigid plastic and a separate soft pliable non-absorbent sleeve surrounding said central portion, said sleeve including a plurality of longitudinal grooves formed in the sleeve.

4,465,086

SEALING DEVICE FOR A SHEET METAL TREATING MACHINE

Jacques Coppe, Grande Synthe, and Pierre Lascoux, Plaisir, both of France, assignors to Union Siderurgique du Nord et de l'Est de la France, Paris, France

Filed Jan. 11, 1982, Ser. No. 338,513
Claims priority, application France, Jan. 9, 1981, 81 00289
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—122 R **7 Claims**



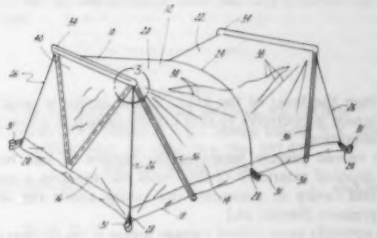
1. A sealing device for a machine for treating metal sheets or the like and having an input end and an output end, said machine comprising an upper frame and a lower frame which have walls which define an enclosure in which enclosure a treating fluid can circulate, sets of rolls carried by said frames and provided for driving and guiding the sheets and operative in pairs, at least one sealing means in the vicinity of said input and output ends, each sealing means being carried by one of said walls defining the enclosure and being cooperative with an adjacent roll of said rolls and comprising a slot provided in said one wall and extending throughout the width of the machine an an added means which is detachably fixed to an outer surface of said one wall and partly disposed in said slot, said added means comprising a sealing element cooperative with the adjacent roll, shifting means for selectively shifting said sealing element between a position in which the sealing element is held against said adjacent roll and a retracted position in which said sealing element is spaced away from said adjacent roll, said shifting means comprising a deformable hollow body for connection to a source of fluid under pressure and carrying said sealing element, which sealing element is made from a material having a low coefficient of friction.

4,465,087

TENT

Robert W. Ferguson, Ann Arbor, Mich., assignor to Oyster Tent Company, Ann Arbor, Mich.

Filed Aug. 1, 1982, Ser. No. 519,462
Int. Cl.³ A45F *1/00*
U.S. Cl. 135—101 **14 Claims**



1. In a tent having a four cornered top wall and longitudinally extending sidewalls on opposite sides of said top wall, two tent fabric sections, each seamlessly forming respective portions of said top and sidewalls, said two fabric sections joining together along a continuous longitudinally central arch-shaped seam which extends transversely up one sidewall, merges into said top wall, extends across said top wall, merges into the opposite sidewall, and extends down said opposite sidewall, and means for supporting the tent in erected condition at the four corners of said top wall with the four corners of said top wall disposed vertically above the level of said seam as it extends across said top wall.

4,465,088

CONSTRUCTION OF LOW WATER LEVEL SENSING DEVICE FOR HOT WATER BOILER

George W. Vosper, 149 Earl St., Kingston, Ontario, Canada K7L 2H3

Continuation-in-part of Ser. No. 183,749, Sep. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 60,488, Jul. 25, 1979, abandoned. This application Feb. 18, 1983, Ser. No. 467,759
Int. Cl.³ F22B *37/46*
U.S. Cl. 137—1 **15 Claims**

1. In a pressurized heating system having water in a boiler and a low water level sensor and safety cut-off device associated with the boiler and operable to shut off the system when the water in the boiler drops below a predetermined level, said low water sensor device comprising:

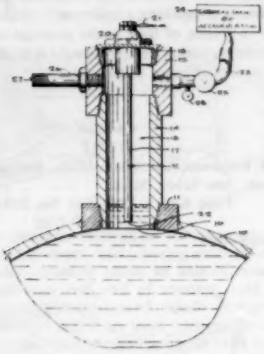
(a) a housing having a cavity;

(b) means mounting said housing on the vessel such that a

substantial portion of said housing, having the cavity therein, is external of the vessel;

(c) a sensor in said cavity responsive to the liquid level therein and operably associated with the heating system to shut off the same when the liquid level in the boiler drops below a predetermined level;

(d) a passageway in said housing having an open inlet end immersed in the water during normal operation of the boiler, said passageway providing fluid flow communication between the interior of the vessel and said cavity, the inlet to such passage being at a lower vertical elevation



than the level of the water in the cavity at which the sensor is operative to shut off the system in a low water condition;

(e) valved passage means in the portion of said housing disposed exteriorly of the vessel for injecting a gas into said cavity to pressurize the cavity above the normal pressure therein; and

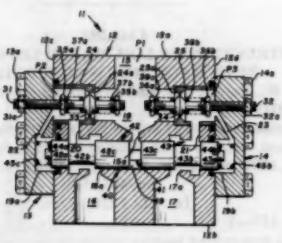
(f) normally open valved passage means in the portion of the housing located exteriorly of the vessel and connected to some higher point in the system such as an accumulator providing means for releasing the gas from said cavity and equalizing pressure between the cavity and the boiler.

4,465,089

FLOW DIVIDER AND COMBINER FOR TRACTION CIRCUITS

Harold Inhofer, Hopkins, assignor to Mag-Dynamics, Inc., Ottumwa, Iowa

Filed Sep. 29, 1982, Ser. No. 426,698
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—101 **6 Claims**



1. A fluid control device for selectively dividing and combining fluid flow to and from at least a pair of independently driven members, such driven members being connected to one another through an exteral source, said control device including:

a. a housing;

b. a first passage formed in said housing to selectively receive and deliver fluid to and from said housing;

c. a pair of passages formed in said housing to selectively receive and deliver fluid to and from said housing;

d. an orifice passage formed in said housing and communicating with said first passage and providing a pair of orifices on respective sides of said first passage;

e. a control spool passage formed in said housing and communicating with said pair of passages to receive and deliver fluid thereto and therefrom;

f. a first pair of communicating passages formed in said housing permitting fluid flow between said orifice passage and said control spool passage, said communicating passages on the respective sides of said orifices such that flow therethrough is controlled by said orifices and communicating with said spool control passage in spaced relation to the ends of said passage;

g. a second pair of communicating passages formed in said housing permitting fluid flow between said orifice passage and said control spool passage, said second communicating passages on the respective sides of said orifices such that flow therethrough is controlled by said orifices and communicating with said spool control passage adjacent the ends thereof;

h. a third communicating passage formed in said housing permitting fluid flow from said first passage to said spool control passages, such communication with said spool control passage being intermediate said first pair of communicating passages;

i. a pair of flow controlling spools slidably and sealingly arranged in said control spool passage, each of said spools having ends of a diameter to seal within said control spool passage and of a fluid passing diameter between said ends, a first of said ends controlling communication between one of said receiving and delivering passages and said first communicating passage when said spool is in a first position and the other of said ends controlling communication between one of said receiving and delivering passages and said first communicating passage when said spool is in a second position; and,

j. pressure responsive valving members arranged in close association to each of said orifices and being shiftable in response to pressure and fluid flow through said first passage and said pair of passages.

4,465,090

AIR RELAY

Morris E. Morgan, and William A. Morgan, both of Valencia, Calif., assignors to Menco Manufacturing, Inc., Valencia, Calif.

Filed May 7, 1982, Ser. No. 375,812
Int. Cl.³ F16K *11/14*
U.S. Cl. 137—102 **8 Claims**

1. In an oscillating valve, the combination of:

a valve housing including means defining poppet, piston and needle sections, said poppet section including a first seat and said needle section including a needle orifice;

a poppet slidably positioned in said poppet section;

a piston slidably positioned in said piston section, said piston having a flow path therethrough with a second seat; and

a needle stem adjustably positioned in said needle section for varying the size of said needle orifice;

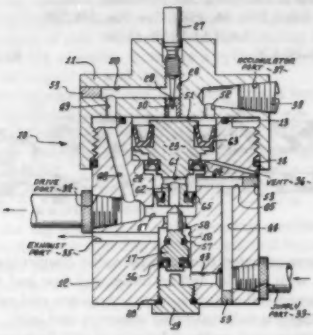
said housing including a supply port with a first passage to said poppet section and a second passage to said piston section, an exhaust port with a third passage to said poppet section, and a drive port with a fourth passage to said piston section and a fifth passage to said needle section;

said poppet including a first sliding seal for sealing in said poppet section between said first and second passages;

said piston including a second sliding seal for sealing in said piston section between said second and fourth passages, and a third sliding seal for sealing in said piston section

between said second and fifth passages and defining a chamber between said piston and needle orifice;

whereby gas pressure at said supply port moves said poppet to engage said first seat and close said exhaust port, and moves said piston away from said poppet to permit flow from said supply port to said drive port through said second passage, piston flow path and fourth passage, and back pressure at said drive port through said fifth passage and needle orifice into said chamber moves said piston to



engage said second seat with said poppet and close said piston flow path blocking flow from said supply port to said drive port and move said poppet away from said first seat and permit flow from said drive port to said exhaust port through said fourth passage, poppet section and third passage,

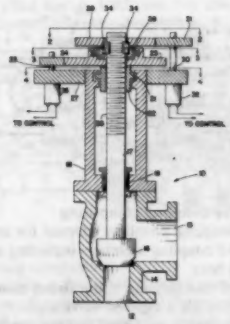
with the pressure at said supply port providing the sole force for moving said poppet toward said first seat and providing the sole force for moving said piston away from said poppet.

4,465,091

IMPROVED SELF-GRINDING VALVE

Leander L. Keller, Laplace, La., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 20, 1982, Ser. No. 420,440
Int. Cl.³ F16K *29/02, 31/53*
U.S. Cl. 137—243.6 **3 Claims**



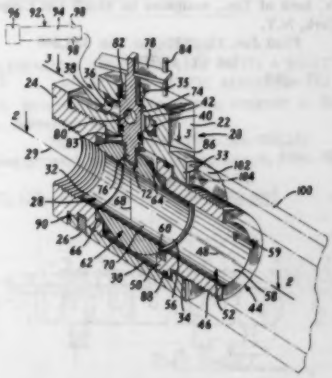
1. In a valve of the type having (1) a casing having (2) an inlet opening and (3) an outlet opening and (4) a valve seat intermediate the inlet and outlet openings, (5) a disc adapted to sit on and seal the valve seat thereby preventing flow from the inlet to the outlet, (6) a longitudinal stem attached to the disc at one end and having a threaded portion intermediate its ends, (7) stem rotating means operatively attached to the stem to cause it to rotate about its longitudinal axis, (8) nut means operatively attached to the threaded portion of the stem, and (9) means operative either to hold the nut means fixed with respect to the casing or to rotate the nut means, thereby moving the stem longitudinally, said stem rotating means being operative in a first operating mode, wherein the nut means is fixed with respect to the casing, to move the stem longitudinally, thereby moving the disc toward or away from the valve seat, and said nut operative means being operative in a second operating mode wherein said stem rotating means prevents rotation of the stem, to move the stem longitudinally, the improvement wherein the stem rotating means and the nut operative means are each driven independently of the other and wherein the stem rotating means and the nut operative means are fixed relative to each other and relative to the valve casing so as to prevent their longitudinal motion along the axis of the stem relative to each other or to the casing, and control means operatively connected to the stem rotating means and the nut operative means to operate them (a) individually, so that the stem and the disc move longitudinally with or without rotation, depending on the mode chosen, or (b) concurrently in the same direction so that the stem and the disc move more rapidly toward or away from the valve seat than when the stem rotating means or the nut operative means are operated individually or (c) in opposition so that the stem and the disc rotate but do not move longitudinally whereby the valve can be continuously self-grinding after the disc is seated on the valve seat.

4,465,092

VALVE WITH ANTI-REMOVAL FEATURE

Steven Vitale, 269 Greencroft Ave., Staten Island, N.Y. 10308

Filed Oct. 16, 1980, Ser. No. 197,477
Int. Cl.³ F16K *51/00*
U.S. Cl. 137—328 **46 Claims**



1. A valve for attachment to a conduit comprising:

(a) a housing defining a passageway;

(b) attachment means actuatable for releasably attaching said housing to a conduit;

(c) a valve element mounted to said housing for movement over a range of positions;

(d) means for moving said valve element; and

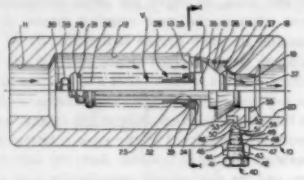
(e) block means defined by said valve element for impeding detachment of said housing from the conduit when said valve element is in a first position within said range by impeding coupling between said attachment means and a tool for movement thereof and for permitting detachment of said housing from the conduit when said valve element is in a second position within said range.

4,465,093

HYDRAULIC FUSE VALVE

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122, and Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 285,596, Jul. 21, 1981. This application Sep. 3, 1982, Ser. No. 414,829
Int. Cl.³ F16K 17/30
U.S. Cl. 137—498 48 Claims



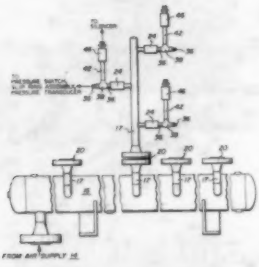
1. A fluid fuse valve comprising a housing having a bore provided with first and second converging surface means, fluid shut-off means slidably mounted in respect to said bore, said fluid shut-off means having first sharp edge means operable to form first variable orifice means in respect to said first converging surface means, second sharp edge means on said fluid shut-off means operable to form second variable orifice means in respect to said second converging surface means, converging shut-off means interposed between said first and said second sharp edge means, and spring biasing means operable to oppose forces developed on said fluid shut-off means be flow of fluid through said fuse valve.

4,465,094

COMPRESSED AIR DISTRIBUTION SYSTEM

Donald F. Huffhines, Richardson, and Robert E. Roach, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,240
Int. Cl.³ F17D 1/00
U.S. Cl. 137—557 2 Claims



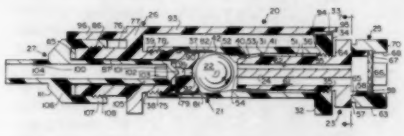
1. An air distribution system for use in an acoustic seismic exploration system with a high pressure air supply comprising:
reservoir means for receiving high pressure compressed air from one source;
a plurality of major conduit means connected to said reservoir means for removal of a portion of said high pressure compressed air;
a plurality of minor conduit means each connected to said major conduit means through a first electrically operated valve for simultaneously distributing said portion of said high pressure compressed air;
a plurality of second electrically operated valves, connected to each of said minor conduit means to control pressure of said compressed air therein; and vent means connected to each of said minor conduit means through said second electrically operated valve;
a plurality of acoustic air guns, each connected to one of said minor conduit means.

4,465,095

PRESSURE-OPERATED FLOW CONTROL VALVE AND MOLDING METHOD

John E. Lindberg, Point Richmond, Calif., assignor to Owen, Wickersham & Erickson, San Francisco, Calif.

Filed Feb. 16, 1982, Ser. No. 348,700
Int. Cl.³ F16K 15/00
U.S. Cl. 137—614.2 42 Claims



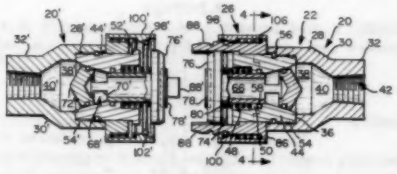
1. A pressure-actuated flow control valve comprising:
a housing with an inlet and an outlet and first and second spaced-apart ball seats in a passage between said inlet and outlet, the first ball seat being closer to said inlet,
a permanent magnet on the inlet side of said first seat,
a ferromagnetic ball in between said seats urged by said magnet toward said first seat to check backflow,
flow control means on the outlet side of said valve for controlling flow therethrough,
said valve responding to a predetermined pressure differential between the inlet and the outlet to move said ball away from said first seat and toward said second seat,
said passage widening between said first seat and said second seat.

4,465,096

FLUID VALVE COUPLING

Leo G. Voisine, New Bedford, Mass., assignor to Alpha Couplings, Inc., New Bedford, Mass.

Filed Jul. 1, 1981, Ser. No. 279,562
Int. Cl.³ F16L 37/28
U.S. Cl. 137—614.04 8 Claims



1. A fluid valve coupling comprising
(a) identical coupling members adapted for interconnection
(b) each of said coupling members including a housing having an axial bore
(c) the bore of said housing being flared near one terminal thereof to provide a tapered valve seat
(d) a valve mounted in said bore and longitudinally movable with respect to said housing
(e) said valve being of tubular construction throughout a substantial portion of its length for the transmission of fluid therethrough
(f) ports in the periphery of said tubular valve spaced from the inner terminal of the valve, the ports being in communication with the axial bore of the housing
(g) the inner terminal of said valve being enlarged to provide

a tapered head, the peripheral portion of which is complemental to, and adapted for sealing engagement with, said tapered valve seat

(h) tensioning means for normally urging said valve head into sealing engagement with the valve seat

(i) end sealing members at the opposite end of said tubular valve, the end sealing members being forced together to effect longitudinal movement of each valve with respect to each housing for lifting the tapered head from the valve seat, to permit the flow of fluid, and

(j) a lug assembly extending from opposed terminals of the coupling members for complemental engagement to effect locking of said members when the coupling is operative

(k) said lug assembly including a cylindrical body rotatable with respect to said valve

(l) spaced rectilinear lugs extending from a terminal of said cylindrical body

(m) said lugs being transversely arcuate, and provided with inner and outer arcuate recesses in the outer periphery of said lugs

(n) the respective inner and outer arcuate recesses of the lugs lying in vertical planes

(o) the lug assembly of each coupling member further including a circular clip circumjacent said lug assembly, the inner periphery of said clip being positioned in the inner recesses of the lugs

(p) the clip of each coupling member being adapted to be received in the outer recesses of the opposed coupling member lugs when the coupling members are interconnected by axial movement of one coupling member into the other, and

(q) locking means carried by said lug assembly and automatically operable upon interengagement of the lug assemblies of opposed coupling members, to prevent accidental disengagement of the coupling members

(r) said locking means including a collar surrounding said housing of each coupling member and in proximity to said lugs

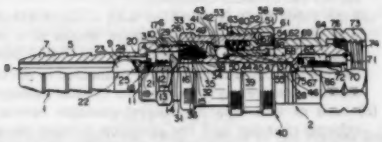
(s) a portion of said collar of each coupling member normally being in engagement with the circular clip, to maintain the latter in the outer recesses of the opposed coupling member lugs.

4,465,097

COUPLING

Hideo Suzuki, Tokyo, and Tsurukichi Sakuma, Gunma, both of Japan, assignors to New-Machine Co., LTD.

Filed Apr. 6, 1982, Ser. No. 366,000
Claims priority, application Japan, Apr. 9, 1981, 56-51086
Int. Cl.³ F16L *37/06*
U.S. Cl. 137—614.04 **14 Claims**



1. A coupling comprising:

a socket having a first fluid passage passing therethrough, and an on-off valve chamber, a first packing chamber and a second packing chamber formed in succession in said socket along said first fluid passage;

an elastic packing disposed in said first packing chamber;

a sealing member disposed in said second packing chamber, said sealing member and said elastic packing having adjacent surfaces pressed against each other;

an on-off valve located in said on-off valve chamber and having a cylindrical valve body which can approach said first packing chamber and recede therefrom;

an abutment formed on an intermediate portion of said valve body and adapted to abut against said packing;

urging means for urging said valve body toward said packing;

a communication passageway formed in said valve body and opened at its one end which is closer to said packing and at the outer surface of said valve body which is defined between said one end and said abutment;

a plug fixed to said socket and having a second fluid passage passing therethrough, and an insertion section inserted from one end of said socket which is closer to said sealing chamber into said socket and having one end contacting with said one end of said valve body, whereby, as said plug is inserted into said socket, said insertion section separates said abutment from said packing to thereby effect communication between said first and second fluid passages;

said coupling further comprising a locking mechanism for connecting said plug to said socket and comprising:

a ball received in a hole formed in a lateral wall of said socket;

a recessed receiving portion formed in an outer surface of said plug for receiving said ball when said insertion section is inserted into said socket;

a ring member mounted on said socket and having an engaging portion for pushing said ball into said recessed receiving portion when said ring member is moved toward said on-off valve chamber;

a shoulder formed on said socket and a stepped portion formed in said ring member and adapted to contact with said shoulder so as to prevent said engaging portion of said ring member from passing beyond said ball in a direction in which said insertion section is inserted into said socket;

a first urging means for urging said ring member in a direction in which said shoulder contacts with said engaging portion; and

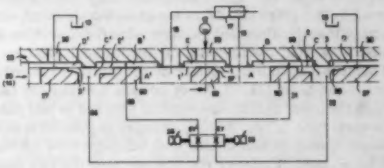
a flange fixed to said socket and a seat reciprocably mounted on said socket and urged by said first urging means to be pressed against said flange.

4,465,098

HYDRAULIC DISTRIBUTOR WITH A REACTION BIASED CONTROL MEMBER

Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Jul. 29, 1982, Ser. No. 403,231
Claims priority, application Spain, Aug. 4, 1981, 505158
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.21 **8 Claims**



1. Hydraulic distributor, more particularly for a vehicle power steering system, including two cooperating elements (20,23) displaceable one relative to the other under the action of a control member (14,21) and defining at least one modulable fluid flow circuit (10,11) establishing communication between a pressurized fluid source (12) and a reservoir (13), said circuit including serially arranged first (1;1'), second (2;2') and third (3;3') valve means simultaneously actuated during a relative displacement between said two elements, the output of said first valve means (1;1') being connectable (15;16) to one end of a hydraulic motor (17) controlled by the distributor, and the output of said second valve means (2;2') being connectable (18;19) to hydraulic means for applying a reaction to said

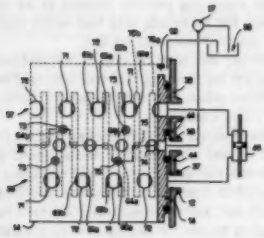
control member and furnishing a characteristic actuating pressure curve of said hydraulic motor torque applied to said control member with a first initial portion (0-1) of zero slope and a following second portion (1-2) with a given slope, characterized in that the distributor comprises, in parallel with said second valve means (2; 2'), fourth modulable valve means (EV,EV') controlled by additional external control means (35;36) so as to selectively modify the position of the transition point between said first and second portions of the characteristic curve.

4,465,099

DISTRIBUTION APPARATUS, ESPECIALLY FOR ASSISTED STEERING SYSTEM

Gilbert Kervagoret, Argenteuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Nov. 23, 1981, Ser. No. 323,845
Claims priority, application France, Dec. 2, 1980, 80 25545
Int. Cl.³ F15B 9/10
U.S. Cl. 137—625.23 **18 Claims**



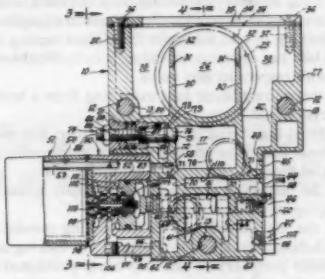
1. Hydraulic distribution apparatus for servomechanisms, especially for assisted steering, of the type comprising two fluid distribution elements, which are cylindrical, coaxial and capable of a limited relative rotation about their common axis to both sides of a neutral relative position, these distribution elements having apertures and cavities defining a fluid circulation circuit (26) which can be connected between a source of fluid (27) and a reservoir for fluid (28), this circuit having two distribution branches (56, 57) arranged in parallel, provided with passages of variable section defined in the cylindrical surfaces of contact of said distribution elements and especially including, in each branch, two types of passage with opposite directions of variation of aperture for either direction of said relative rotation beyond said neutral relative position, some passages of these two types communicating with a working pressure output point (37, 39) of the branch concerned, characterized in that the aforesaid passages of variable section are all formed by partial overlapping of longitudinal grooves (70*a*, 70*b*) made in a cylindrical surface of one (15) of the distribution elements and holes (71, 72, 73) of circular contour cut radially through the other distribution element (14) and in that passages of the same type "a" or "b") are arranged in parallel in one and the same branch of said circuit with different flow sections at least for a range of relative rotation between the two distribution elements about said neutral relative position, to obtain a required law of variation relating the increase in available pressure at one of said pressure output points to the angle of relative rotation in the corresponding direction, each branch is provided with at least one passage (64*a*, 64*b*) of variable section for high pressures whose complete closure for a corresponding direction of relative rotation of said distribution elements (14, 15) is set for an angle of relative rotation for which all the other passages of the same type are closed, in that this passage for high pressures is set in series with a flow restrictor (65) and in that the unit constituted by this passage and said restrictor is connected between means (38) for coupling to said source of fluid and the pressure point (37 or 39) of said branch (56 or 57).

4,465,100

FOUR-WAY STACKING VALVE WITH COMMON ELECTRICAL CONDUIT AND INDIVIDUAL BODY MOUNTED EXHAUST FLOW CONTROLS

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Feb. 26, 1982, Ser. No. 352,769
Int. Cl.³ F15B 13/08
U.S. Cl. 137—625.64 **6 Claims**



1. A four-way air valve which includes a valve body with a pressurized air supply chamber, a pair of cylinder chambers and a pair of exhaust chambers, and a main valve spool axially movable between two operative positions in a valve spool bore in the valve body to control flow of pressurized air from the air supply chamber to a selected one of said cylinder chambers while simultaneously controlling the exhaust from the other cylinder chamber to a selected one of said exhaust chambers, a top cover releasably mounted on said valve body, and means for moving the main valve spool between the two operative positions, characterized in that:

(a) said air supply chamber is disposed centrally along the valve spool bore which is longitudinally disposed, with the cylinder chambers disposed along the valve spool bore on opposite sides of said air supply chamber and adjacent thereto, and with the exhaust chambers disposed along the valve spool bore with one of the exhaust chambers adjacent to each one of the cylinder chambers on a side thereof opposite to the side adjacent to the air supply chamber;

(b) the valve body is a stacking valve body provided with a pressurized transverse air inlet port which is connected by passage means in the valve body to the air supply chamber;

(c) the valve body is provided with two cylinder ports which are each connected by separate passage means to one of the cylinder chambers;

(d) the valve body is provided with a single exhaust port which is connected by a passage means to a common transverse exhaust passageway in the valve body, and each of the exhaust chambers is connected to the common exhaust passageway by a separate exhaust passage;

(e) each of said separate exhaust passages between each exhaust chamber and the common exhaust passageway includes a bore portion forming a valve seat on one end communicating with the common exhaust passageway;

(f) an adjustable flow control valve, provided with a valve element, is operatively mounted in the valve body adjacent each of the separate exhaust passage bore portions, with the valve elements thereof being movable into and out of the respective adjacent passage bore portions to control the flow of air exhausting from each exhaust chamber into the common exhaust passageway and out through the single exhaust port;

(g) the valve body is provided with a common electrical wire passage that extends longitudinally therethrough;

(h) the valve body is provided with an electrical wire tuck

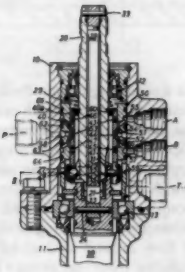
chamber on each side of the common electrical wire passage for receiving electrical lead wires from the common electrical wire passage; and,

(i) each of said adjustable flow control valves is transversely disposed, and the flow control valves extend inwardly from opposite sides of the valve body.

4,465,101
CHANGEOVER VALVE UNIT FOR POWER-ASSISTED STEERING SYSTEMS

Akira Hasegawa, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 21, 1982, Ser. No. 420,924
Claims priority, application Japan, Sep. 29, 1981, 56-155907
Int. Cl.³ F15B 9/10
U.S. Cl. 137—625.68 **5 Claims**



1. A changeover valve unit for a power-assisted steering system, comprising: a valve housing provided with an inlet port, outlet ports, and a drain port; first and second shafts arranged within said valve housing for relative rotation on aligned axes; a resilient member interconnecting said shafts for permitting relative rotation of said shafts; a spool valve element in the form of a cylindrical member arranged within said valve housing in surrounding relationship with said first shaft to be moved in response to relative rotation of said shafts in an axial direction for controlling the flow of fluid among said ports, said spool valve element being arranged to be applied therein with a back pressure from said outlet ports in its axial movement; a changeover mechanism for effecting axial movement of said spool valve element in response to relative rotation of said shafts; and

an annular seal member of elastic material secured at its inner periphery to said first shaft and formed at its outer periphery with an annular lip facing the inner periphery of said spool valve element with a predetermined annular clearance, said annular lip being brought into contact with the inner periphery of said spool valve element by the back pressure acting thereto at a higher level than a predetermined value.

4,465,102
CHECK VALVE

Warren E. Rupp, Mansfield, Ohio, assignor to The Warren Rupp Company, Mansfield, Ohio

Filed May 17, 1982, Ser. No. 378,920
Int. Cl.³ F16K 15/14
U.S. Cl. 137—849 **16 Claims**

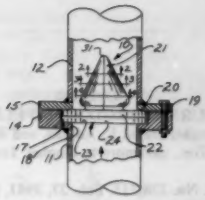
1. A check valve comprising:

a valve element composed of flexible material, and having

a base portion adapted to be secured in a passageway, and defining an opening in communication with said passageway, and

a plurality of vanes projecting from said base portion in a forward flow direction, each vane being hingedly attached to said base portion in a linear zone of reduced thickness relative to the adjacent portions of the vanes and being pivotable between an open position in which the vane extends substantially parallel to the direction of forward flow of fluid through said opening and a closed position wherein the edges of each vane maked sealing engagement with the edges of adjacent vanes, thereby substantially preventing flow of fluid through said opening in a reverse direction, whereby the vanes may move readily from open to closed position upon increase of back pressure in said passageway;

each vane having a planar inner surface defining an apex at



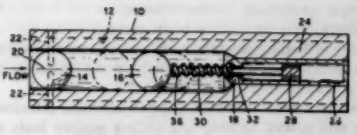
its forwardly extending end and each inner surface terminating at its end adjacent said base, in a shoulder extending outwardly from said inner surface, said shoulders lying in a common plane perpendicular to the axis of said element; and

rigid means associated with said valve element and having a sleeve portion conforming to and engaging said opening through said base portion, the forwardly extending end of said sleeve portion engaging said shoulders for supporting said valve element against fluid pressures applied to the exterior of said valve element.

4,465,103
SELF-REGULATING FLOW CONTROL DEVICE

Duane A. Humphreys, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 20, 1982, Ser. No. 399,950
Int. Cl.³ F15D 1/10
U.S. Cl. 138—40 **3 Claims**



1. A variable, self-regulating flow control device for controlling flow rate consisting essentially of:

a. first means, defining a channel having a longitudinal axis, a minimum cross sectional area perpendicular to said axis, and at least one opening at either end for conducting a fluid therethrough along said axis in a first direction;

b. a stationary object having a maximum cross sectional area perpendicular said axis which is less than said minimum cross sectional area and disposed in said channel on said axis and substantially fixed with respect to said first means;

c. a moveable object having a maximum cross sectional area perpendicular said axis which is less than said minimum cross sectional area and disposed in said channel on said axis said moveable object being spaced from said stationary object and moveable in a direction parallel to said axis and responsive to drag forces exerted by said fluid to be displaced in said first direction; and

d. means for resisting displacement of said moveable object

in said first direction with a force which increases with increasing displacement of said moveable object in said first direction;

whereby hydraulic resistance to fluid flow past said stationary and moveable objects is an increasing function of the instantaneous distance between said stationary and moveable objects and whereby the difference between said minimum cross sectional area and one of said maximum cross sectional areas constitutes a flow area, said device being operable to control said flow rate while maintaining said flow area substantially constant.

4,465,104

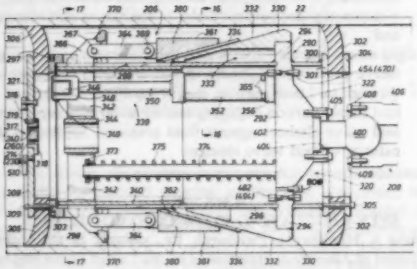
PRESSURE ENERGIZED PIPELINE PLUG

Robert H. Wittman; David E. Adkins, and Ronnie E. Haws, all of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Division of Ser. No. 238,713, Feb. 27, 1981, Pat. No. 4,422,477. This application Sep. 28, 1983, Ser. No. 536,794

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 **13 Claims**



1. Apparatus for plugging the bore of a pipe at a selected location and withstanding a pressure differential thereacross that may equal or exceed the designed working fluid pressure of the pipe, comprising in combination:

cylindrical locking module body means,

cylindrical sealing module body means spaced forward of said locking body means in the pipe and including a pressure head having a selected area,

articulated connection means for structurally interconnecting said spaced locking and sealing module body means and permitting limited bending movement and axial deflection therebetween during axial movement within the pipe,

support means attached to and cooperating with both said body means for supporting both said body means axially in the pipe during movement therein,

pipe gripping means carried by said locking module body means for locking engagement with the inside surface of the pipe to anchor said locking module body means in said pipe, compression seal means having a selected annular area and carried by said sealing module body means for radially expanding in response to axial force applied thereto for sealingly engaging the inside surface of the pipe and converting said axial force into radial sealing pressure in a predetermined relationship, and

actuating means for actuating said pipe gripping means and for applying a predetermined initial axial force to said compression seal means for radially expanding said seal means into engagement with said pipe.

4,465,105

FLEXIBLE HOSE

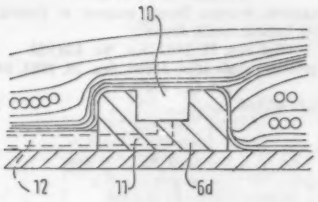
Christopher J. Slater, Grimsby, England, assignor to Dunlop Limited, London, England

Filed Sep. 24, 1982, Ser. No. 423,265

Claims priority, application United Kingdom, Mar. 23, 1982, 8208403

Int. Cl.³ F16L *55/00*

U.S. Cl. 138—104 **10 Claims**



1. A flexible hose comprising a main fluid retaining carcass, a secondary fluid retaining carcass which encloses at least part of said main carcass, said main and secondary carcasses being connected at corresponding one ends to a nipple portion of an end fitting, said nipple portion having an annular rib adjacent to and axially outwards of the end of said main carcass, and a circumferentially continuous groove formed in the radial outer surface of said rib whereby fluid leaking from said main carcass may pass into and flow around said groove, and an axially extending passage leading from said groove to a leak detector.

4,465,106

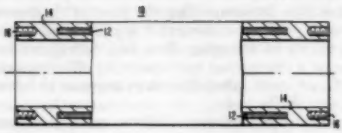
WARM DAMPER FOR A SUPERCONDUCTING ROTOR

George D. Hooper, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 19, 1982, Ser. No. 350,527

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—142 **8 Claims**



1. A damper assembly, comprising:

a first cylinder having a first and a second end, said first cylinder having a central bore therethrough, said first cylinder being electrically conductive;

a second cylinder, said second cylinder having a central bore therethrough, said second cylinder being bonded to said first end of said first cylinder, said second cylinder being aligned coaxially with said first cylinder;

a third cylinder, said third cylinder having a central bore therethrough, said third cylinder being bonded to said second end of said first cylinder, said third cylinder being aligned coaxially with said first cylinder;

said first, second and third cylinders having generally identical inside and outside diameters;

a fourth cylinder having a central bore therethrough, said fourth cylinder being disposed radially inward from and coaxially with said first, second and third cylinders, said fourth cylinder being bonded to said first, second and third cylinders;

a fifth cylinder having a central bore therethrough, said fifth cylinder being disposed radially outward from and coaxially with said first, second and third cylinders, said fifth

cylinder being bonded to said first, second and third cylinders;

said first cylinder being bonded to said second and third cylinders by solder;

said fourth cylinder being explosively welded to said first, second and third cylinders; and

said fifth cylinder being explosively welded to said first, second and third cylinders.

4,465,107

MEANS FOR CONTROLLING KNIFE OSCILLATIONS AND HOOK MOVEMENTS IN A LOOM DOBBY

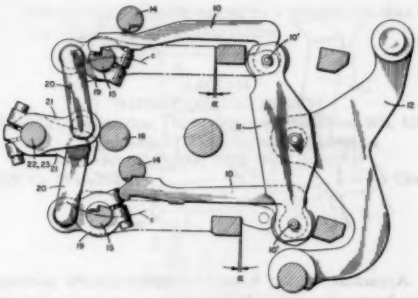
Olivo Epis, Ponte Nossa, Italy, assignor to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A., Italy

Filed Aug. 5, 1982, Ser. No. 405,359

Claims priority, application Italy, Aug. 6, 1981, 23413 A/81

Int. Cl.³ D03C *1/00, 1/28, 1/06*

U.S. Cl. 139—66 R **5 Claims**



1. Linkages for controlling those oscillations of the fixed and mobile knives of a dobby which are intended to facilitate correct engagement of said knives with the dobby hooks, characterised by comprising first levers fixed to the knives, second levers fixed to control shafts, and connecting rods which link said first and second levers together, said control shafts being aligned on a common axis and mutually abutting, and the linkages forming two articulated 4-sided polygons having vertices, one of the vertices of one polygon being in common with a vertice of the other polygon.

4,465,108

PLAY TAKING-UP MEANS IN LOOM DOBBY CONTROL UNITS

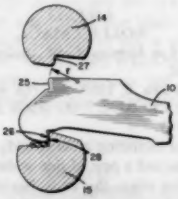
Olivo Epis, Ponte Nossa, Italy, assignor to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A., Italy

Filed Aug. 5, 1982, Ser. No. 405,369

Claims priority, application Italy, Aug. 6, 1981, 23414 A/81

Int. Cl.³ D03C *1/00, 1/06*

U.S. Cl. 139—66 A **3 Claims**



1. A loom dobby, characterised in that in order to improve take-up of the play which arises when the ends of the rocker levers make contact with the relative fixed and mobile stop blades in the dobby control unit, the surfaces of said blades (fixed and mobile respectively) which are designed to make contact with the rocker levers are positioned perpendicular to the line joining the points of contact between the dobby hooks and knives (fixed and mobile respectively) to the mean points of contact between said blades and the rocker levers, said surfaces also having a concave profile in the fixed blades and a convex profile in the mobile blades in the form of circular arcs having their centre at the points of contact between the fixed knives and the hooks and between the mobile knives and the hooks respectively.

4,465,109

LOOM DOBBY CONTROL UNITS

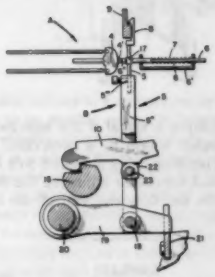
Olivo Epis, Ponte Nossa, Italy, assignor to Fimtessile Fabrica Italiana Macchinario Tessile S.p.A., Italy

Filed Aug. 5, 1982, Ser. No. 405,360

Claims priority, application Italy, Aug. 6, 1981, 23412 A/81

Int. Cl.³ D03C *1/00, 1/26, 1/06*

U.S. Cl. 139—68 **4 Claims**



1. A dobby for forming the shed in looms, comprising a reading unit having rockers and tappets for the fabric design which is in coded form on punched paper tape and a control unit having horizontal needles, vertical lifting rods, first levers and comb-shaped stops for the lever systems of the heald frames, said reading unit being structurally separate from the control unit, the reading unit acting on the control unit by bearing and thrust contact between tappets of the reading unit rockers and ends of said horizontal needles of the control unit which control the vertical lifting rods for hooks, said vertical lifting rods pivoting at a lower end to said first levers which rock within said comb-shaped stops which halt the rods in a downward direction and guide them laterally.

4,465,110

JET WEAVING MACHINE

Martinus Dekker, Deurne, Netherlands, assignor to Rüti-te Strake, B.V., Netherlands

Filed Jan. 13, 1982, Ser. No. 339,084

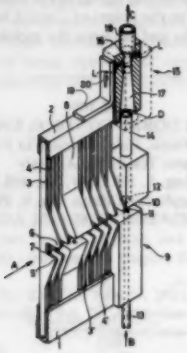
Claims priority, application Switzerland, Jan. 13, 1981, 197/81

Int. Cl.³ D03D *51/34*

U.S. Cl. 139—370.2 **6 Claims**

1. A jet weaving machine having an inserting nozzle at one end of a shed, a guide channel comprised of lamallae and extending over the width of the warp for guiding a weft thread in the shed during insertion, a first weft thread monitor disposed in the region of a far end of the shed in the direction of weft insertion for emitting a signal when an inserted weft thread has not reached its intended length, and a tensioning device disposed in the weft insertion direction on the downstream side of the first weft thread monitor for stretching, straightening, and holding the inserted weft thread until beating-up is performed, said tensioning device being in the form of an element through which an auxiliary fluid flows, said ele-

ment taking a leading end of the inserted weft thread which end projects out of the shed and bending the inserted thread away from the weft direction by acting on the thread generally perpendicular to the weft direction, a second weft thread monitor disposed downstream in a direction of flow of the auxiliary fluid of a flow exit end of the tensioning device, said



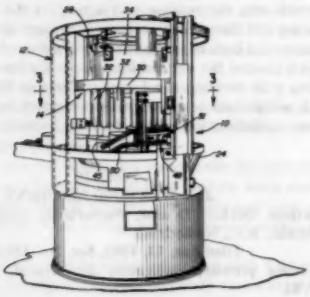
second monitor emitting a signal if the inserted weft thread overshoots its intended length by a prescribed distance, the second weft thread monitor being mounted on a frame channel of the reed dents, and means for adjusting the distance of the second monitor from the flow exit end of the tensioning device.

4,465,111

CONTAINER FILLING APPARATUS HAVING MAGNET AND VIBRATOR CONNECTED THERETO

John C. Nalbach, La Grange Park, Ill., assignor to John R. Nalbach Engineering Co., Inc., Chicago, Ill.

Filed Jan. 24, 1983, Ser. No. 460,164
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—79 **16 Claims**



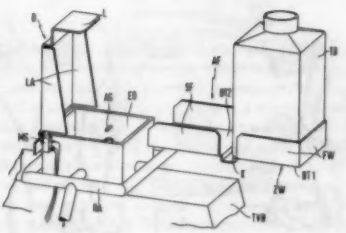
1. In an apparatus for filling like magnetic containers with a like measured amount of divided material product including; a housing, a drive, a filling tank for holding product, said filling tank having a movable base connected to said drive, a plurality of product measuring devices connected to the movable base for receiving divided material product from the tank and measuring the amount of said product, said product measuring devices moving in a prescribed path, means connected to said drive for moving a container at the same rate as a product measuring device while the container is receiving a measured quantity of product from the product measuring device, the improvement comprising; a magnet positioned adjacent to a portion of the path of the product measuring devices for attracting containers with divided material product contained therein as they pass the magnet, and a vibrator connected to the magnet for vibrating the magnet and a container attracted to the magnet to compact the divided material product in the container.

4,465,112

DEVICE FOR FILLING TONER FROM A CONTAINER INTO A RESERVOIR

Walter Kopp, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,886
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116870
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—284 **11 Claims**



1. Apparatus for use in an electrophotographic printing device for supplying particle toner from a container having an upper end discharge opening through a fill opening formed in a toner reservoir for a charge image developer station comprising:

a guide trough means disposed adjacent said fill opening comprising a centering portion for supporting said container in an intial upstanding position, a seating portion facing said fill opening for supporting said container in an intermediate lateral position, and a pivot channel means for receiving a lower edge of said container such that said container lower edge rotates in said channel means for movement to an upturned position from the lateral position with said discharge opening disposed in said fill opening,

said fill opening sized to receive the upper end of said container therein without toner spilling outside said fill opening as said container is rotated from said lateral position to said upturned position, and

mounting means for supporting said container vertically inverted in said fill opening.

4,465,113

ROLLER MAUL

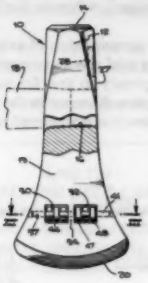
George Hillinger, Los Angeles, Calif., assignor to Alltrade Inc., Commerce, Calif.

Filed Feb. 8, 1983, Ser. No. 464,846
Int. Cl.³ B27L *7/00*; B26B *23/00*
U.S. Cl. 144—193 D **9 Claims**

1. A cutting tool including a blade body having a relatively thick upper section and a pair of side walls converging downwardly to a cutting edge, the body having mounted therein antifriction means having movable surfaces extending beyond the side walls,

the antifriction means including a respective cylindrical roller mounted to the body for rotation about each of a pair of horizontally aligned axes, each roller having a

cylindrical surface constituting one of said movable surfaces and the rollers being axially offset from one another,



the axes being laterally spaced by a distance less than the sum of the radii of the two rollers.

4,465,114

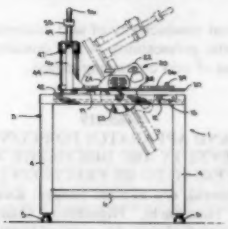
WOODWORKING BENCH

Robert C. Schumacher, 112 N. Main St., Jefferson, Wis. 53549

Filed Aug. 27, 1982, Ser. No. 412,114

Int. Cl.³ B25H *1/02*; B27C *5/10*

U.S. Cl. 144—286 R **9 Claims**



1. A woodworking bench for precision cutting of wooden workpieces, comprising:

a frame;

a table top mounted on the frame and having a pair of opposing flat surfaces, said table top being selectively movable between a first position wherein one of said surfaces provides a top work surface and a second position wherein the other of said surfaces provides the top work surface;

a saw support means mounted on said one surface which includes guide means for slidably guiding a portable circular power saw so that the saw blade may move across a workpiece when said table top is in said first position, and saw lock means for locking said saw in a fixed position on said guide means wherein the saw blade projects through an opening in said table top so that a workpiece may be moved along said other surface across the blade when the table top is in said second position; and

table securing means for releasably securing the table top to said frame.

4,465,115

HAMMERHEAD

Louis M. Palomera, 4091 Manzanita, Irvine, Calif. 92714

Filed Mar. 24, 1983, Ser. No. 478,300

Int. Cl.³ B25C *1/00*

U.S. Cl. 145—30 A **4 Claims**

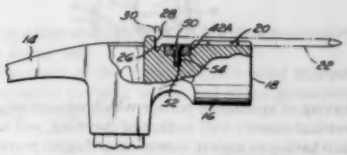
1. An improved hammerhead for facilitating initial driving of a nail without holding the nail in the hand of a user comprising:

a head member adapted to be attached to a handle and having a claw portion and shank portion disposed at opposite ends;

a recess formed in the shank portion of said head member extending longitudinally along the length of the shank portion, said recess sized to receive the elongate body of a nail to be driven;

an angular-shaped pocket formed in the shank portion of said head member and aligned with said recess, said pocket sized to receive the head of a nail to be driven;

a cylindrical bore formed in the shank portion of said head member and juxtapositioned said angular shaped pocket;



a magnet insert formed in a complimentary configuration to said bore to be readily manually inserted into said bore and magnetically retain the nail to be driven within said recess and said pocket during swinging of said head member, said magnet insert having a depth equal to or less than the depth of said bore to position one surface of said magnet insert at an elevation below said recess;

an aperture formed axially through said magnet insert;

a threaded aperture formed in said head member and coaxially aligned with said bore; and

a fastener sized to be insertable through said aperture and threaded into said threaded aperture to removably retain said magnet insert within said bore.

4,465,116

PROCESS FOR PREPARING SAND CORES AND MOLDS

John F. Kraemer, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 342,310, Jan. 25, 1982. This application Jul. 11, 1983, Ser. No. 512,835

Int. Cl.³ B22C *9/00*

U.S. Cl. 164—527 **13 Claims**

1. An improved process for preparing foundry cores and molds from a foundry aggregate, a binder and a hardener therefor, comprising the steps of (a) mixing the aggregate with polyvinylammonium phosphate thereby coating the aggregate, and (b) mixing the coated aggregate with a hardener selected from the group consisting of linear alkali metal polyphosphate, ammonium polyphosphate orthophosphoric acid, a polyvalent metal compound selected from the group consisting of alkaline earth metal oxides, silicates, and aluminates,or mixtures thereof and (c) packing the aggregate and binder therefor into a core box or mold box for a length of time sufficient for the binder to cure and form the core or mold.

4,465,117

INGOT MOLD SHIELDS

Charles G. Mason, Gadsden, Ala., assignor to Republic Steel Corporation, N.J.

Filed Jul. 20, 1981, Ser. No. 284,712

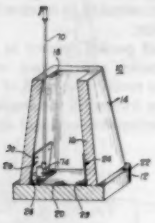
Int. Cl.³ B22D *33/04, 7/06, 7/12*; B29C *1/02*

U.S. Cl. 164—137 **11 Claims**

1. A system for prolonging the useful life of a steel ingot mold including a stool and a mold rim which define a cavity in which molten metal is solidified into an ingot comprising:

a mold shield of a metal sheet material, compatible with said molten metal, which is positioned within the interior of

the mold cavity such that molten metal poured into the mold splashes and impinges upon the surface of the shield rather than on the walls or floors of the mold cavity, the shield being fastened to interior wall surfaces of the mold by means of nails driven through the mold shield and into the mold by an explosive nailing process, said mold shield



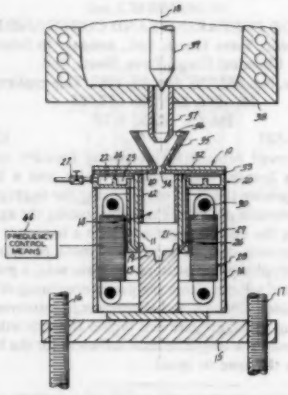
having an upstanding portion which substantially covers a vertical interior wall surface of the mold, and said shield also having an angled, outstanding, flanged portion on one end thereof which seats flush against an upper mold stool surface and is adapted for sealing the joint between the mold rim and the stool.

4,465,118

PROCESS AND APPARATUS HAVING IMPROVED EFFICIENCY FOR PRODUCING A SEMI-SOLID SLURRY

Jonathan A. Dantzig, Hamden, and Derek E. Tyler, Cheshire, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,917
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—452 **6 Claims**



1. A process for improving efficiency in forming a semi-solid alloy slurry, said slurry comprising degenerate dendritic primary solid particles in a surrounding matrix of molten metal, said process comprising:

providing means for containing said molten metal, said containing means having a solidification zone;

electromagnetically mixing said molten metal and shearing dendrites formed in said solidification zone at a desired shearing rate;

said step of electromagnetically mixing comprising:

providing means for generating a moving magnetic field;

supplying current at a desired frequency to said magnetic field generating means;

generating said moving magnetic field with said magnetic field generating means, wherein the improvement comprises:

reducing the power consumption of said generating means;

said step of reducing said power consumption comprising

controlling said frequency so that for said slurry having an effective cross section diameter in the range up to about 2 inches, said frequency is maintained in the range defined by the equation:

$$f = x\left(\left[\frac{-578.7 \times 10^{-5}\ \text{in}^{-1}}{\Delta} - 148\ (\text{in}\cdot\text{sec})^{-1}\right] D + \left[\frac{1214.7 \times 10^{-5}}{\Delta} + 589\ \text{sec}^{-1}\right]\right)$$

and for said slurry having said effective cross section diameter greater than about 2 inches, said frequency is maintained in the range defined by the equation:

$$f = Y\{[0.136 \times 10^5\ (\text{in}\cdot\text{sec}^2)^{-1}(\Delta) - 68.7\ (\text{in}\cdot\text{sec})^{-1}]D + [-2.27 \times 10^5\ \text{sec}^{-2}(\Delta) + 478\ \text{sec}^{-1}]\}$$

where

x = from about 0.75 to about 1.25

y = from about 0.5 to about 1.5

D = said effective cross section diameter

$\Delta = \sigma\mu_o t^2$

σ = electrical conductivity of said containing means

μ_o = magnetic permeability of said containing means

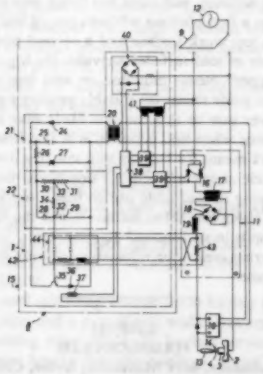
t = thickness of said containing means.

4,465,119

METHOD AND APPARATUS FOR CONTROLLING CURRENT LEVEL IN ARC DISCHARGE MELTING OF MATERIAL TO BE PRECISION CAST

Yoshimasa Kidowaki, c/o Iwatani Sangyo, Kabushiki Kaisha - 1,4 chome, Hommachi, Higashiku, Osaka, and Akira Yonemoto, 13-10 8 chome, Okamoto, Higashinadaku, Kobe, Hyogoken, both of Japan

Filed Sep. 1, 1981, Ser. No. 298,328
Claims priority, application Japan, May 21, 1981, 56-77468
Int. Cl.³ B22D *46/00, 27/02*
U.S. Cl. 164—457 **6 Claims**



1. In a method for arc discharge melting of a material to be cast in a precision casting apparatus, wherein the casting material is disposed in surmounting relation to a melting pot of the

apparatus and an electrode is located opposite said casting material, an arc discharge being generated in an arc gap between said casting material and said electrode by means of charging the arc gap with an arc power device to melt the casting material with said arc discharge, the improvement comprising:

controlling the current charged to the arc gap to cause the current to be relatively small at initiation of the arc discharge; and,

increasing the current to the arc gap rapidly and smoothly to a relatively larger steady current value.

4,465,120

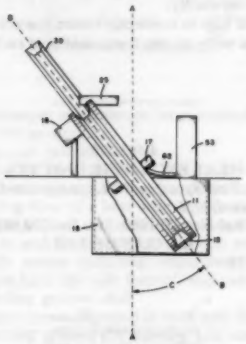
INCLINED WHEEL AND BELT CASTING MACHINE

Michael C. Smith, LaGrange, and Robert S. Linne, Carrollton, both of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 17, 1983, Ser. No. 458,409

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—482 **28 Claims**



1. Improved apparatus for the continuous casting of molten metals to form a cast bar of the type including all of the following being mounted in a generally vertical casting plane, a rotatable casting wheel having a peripheral groove therein, an endless metallic band adapted to cover a portion of said groove to form an arcuate mold cavity therebetween, and means for cooling said mold cavity at a rate sufficient to at least partially solidify the molten metal cast therein; wherein the improvement comprises a casting wheel inclinable relative to said vertical casting plane so that said casting plane is adjustable to any of several positions inclined away from said vertical casting plane.

4,465,121

METHOD AND APPARATUS FOR BENDING A STRAND IN A CONTINUOUS CASTING INSTALLATION FOR METALS, ESPECIALLY STEEL

Arthur Vaterlaus, Rüschlikon, Switzerland, assignor to Concast Service Union AG, Zurich, Switzerland

Filed Apr. 5, 1982, Ser. No. 365,166

Claims priority, application Switzerland, Apr. 30, 1981, 2818/81

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—484 **10 Claims**

1. A method of bending a continuously cast strand in a continuous casting plants, comprising the steps of:

bending the strand along a transition curve between a circularly arcuate roller apron track and a substantially straight roller apron track;

supporting ferrostatic pressure of a liquid core of the strand by means of a plurality of support roll pairs along the transition curve;

bending the strand along the transition curve exclusively by means of support roll pairs located in the circularly arcuate roller apron track and in the straight roller apron track;

supporting the ferrostatic pressure of the strand between the circularly arcuate roller apron track and the straight roller apron track by support roll pairs not contributing to the

bending action and free to move in a direction transverse to the strand; and

the configuration of the transition curve being determined by constantly changing casting and strand parameters of the strand being bent.

4,465,122

METHOD FOR REDUCING MOLD WIDTH DURING CONTINUOUS CASTING

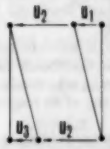
Mutsumi Ohya, Fukuoka, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,018

Claims priority, application Japan, Jul. 3, 1980, 55-91184

Int. Cl.³ B22D *11/04, 11/16*

U.S. Cl. 164—491 **1 Claim**



1. A method for reducing a mold width during continuous casting of molten metal, which comprises:

a first step of inwardly moving the upper end portion of at least one of pair of narrow side walls of the mold while the lower end of said narrow side wall is fixed;

a second step of inwardly moving the narrow side wall as a whole to cause the lower and upper end portions to move in parallel, and wherein said second moving step is performed under the condition of

$$u_2 = K \cdot \frac{l}{L} v$$

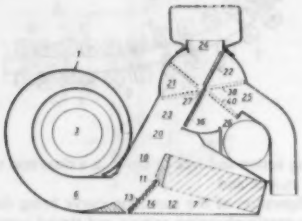
wherein u_2 represents the moving speed of the side wall in the second step, l represents the movement distance of the upper end portion in the first step, v represents the casting speed, K is a constant less than 1.0, equal to 1.0, or larger than 1.0, and L represents the effective length of the mold; and

a third step of further inwardly moving the lower end portion of the narrow side wall so as to incline the narrow wall in a predetermined angle to complete the mold width reduction.

4,465,123
VEHICLE VENTILATING SYSTEM

Rolf B. Sarsten, Henån, and Sten E. Nilsson, Vargön, both of Sweden, assignors to Saab-Scania Aktiebolag, Sweden

Filed Mar. 31, 1982, Ser. No. 363,940
Claims priority, application Sweden, Apr. 1, 1981, 8102069
Int. Cl.³ F25B 29/00
U.S. Cl. 165—16 18 Claims



1. An arrangement in a vehicle ventilating and temperature-adjusting system, the arrangement comprising:

a ventilation unit having at least one inlet for entering air and having a plurality of ventilation outlets for the exit of air into the interior of a vehicle, the ventilation unit further having a cold air duct and a hot air duct, each connected for receiving air from the inlet and each having a respective duct outlet for the exit of air from the air duct to the ventilation outlets;

a heat exchanger mounted in the hot air duct;

at least one movable warm air flap mounted in the ventilation unit after the inlet, the warm air flap being movable into any of a respective plurality of angular attitudes for regulating the proportion of the air that enters through the inlet which flows through the heat exchanger;

at least one movable air distributor flap mounted in the ventilation unit between the duct outlets and the ventilation outlets, the air distributor flap being movable into any of a respective plurality of angular attitudes for distributing the air that exits from the duct outlets among the ventilation outlets;

first and second electric servo means connected to the warm air flap and the air distributor flap, respectively, each of the servo means being selectively activable for moving the respective flap to any of its respective plurality of angular attitudes;

a first transducer for providing a first temperature signal representing an actual interior temperature;

a second transducer for providing a second temperature signal representing a desired interior temperature; and

an electronic unit connected for receiving the first and second temperature signals and operable for comparing the first and second temperature signals and for transmitting output signals to the first and second servo means for synchronizing and controlling the angular attitudes of the respective flaps.

4,465,124
CASING FOR A HEAT EXCHANGER IN A HEATER OR AIR CONDITIONER INSTALLATION FOR A MOTOR VEHICLE

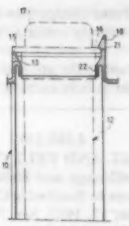
Maurice Jacquet, and Jacques Boidet, both of Maurepas, France, assignors to Valeo, Paris, France

Filed Jun. 2, 1982, Ser. No. 384,432
Claims priority, application France, Jun. 12, 1981, 81 11654
Int. Cl.³ F28F 9/00
U.S. Cl. 165—67 10 Claims

1. A method for mounting a heat exchanger in a casing comprising:

providing a casing comprising a housing defining an opening in at least one end thereof, via which opening the heat exchanger is inserted into the casing, a rim surrounding the opening, and at least two resiliently deformable lugs projecting from the rim, suitable for cooperating with a portion of an end of the heat exchanger;

slidably inserting said heat exchanger into said casing via the opening in a manner so as to push said resiliently deformable lugs outwardly;

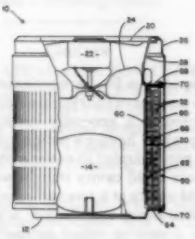


allowing said lugs to resiliently return toward their original position in order to clip fasten said heat exchanger in said housing.

4,465,125
HEAT EXCHANGE UNIT PIN

Rudy E. Haas, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,982
Int. Cl.³ F28F 7/00
U.S. Cl. 165—76 10 Claims



1. A fastener for securing a tube and a support defining a tube receiving opening relative to a member having a fastener receiving void which comprises:

an insertion portion having a body portion of less cross sectional distance than the inside diameter of the tube and at least one tooth extending outwardly from the body portion and having a diameter greater than the inside diameter of the tube to allow a press fit between the tooth of the fastener and the inside surface of the tube;

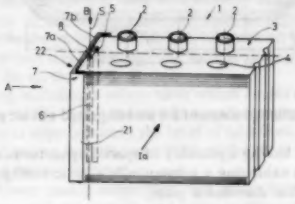
a spacer portion connected to the insertion portion, said spacer portion having a diameter greater than the inside diameter of the receiving opening of the support which is greater than the inside diameter of the tube, said spacer portion having a bottom contact surface for engaging the support and a top contact surface for engaging the member; and

a top portion connected to the spacer portion having a narrow portion with a cross sectional width less than the width of the void in the member and a pair of top pieces forming a support lip for engaging the opposite side of the member from the side of the member engaged by the spacer portion, said top pieces being compressible to allow them to be passed through the void in the member.

4,465,126
HEAT EXCHANGER ARRANGEMENT, ESPECIALLY FOR RADIATORS FOR MOTOR VEHICLES

Wilfried Winterer, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,805
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214453
Int. Cl.³ F28F 7/00
U.S. Cl. 165—77 20 Claims



1. Heat exchanger arrangement for motorized vehicle radiators and the like comprising:

first and second radiator tanks,

a plurality of heat exchange tube means extending between and opening into said radiator tanks for accommodating flow of a heat exchange fluid therethrough,

a plurality of heat exchange fin means extending transverse to and fixedly connected with said tube means, said fin means including respective aligned cutouts along at least one side thereof, said cut-outs forming a connecting groove, and

lateral part means engageable with said fin means at said connecting groove for holding said assembly of tube means and fin means in position in a motor vehicle or the like,

wherein said lateral part means are formed of respective halves which are pivotably connected together to pivot about an axis extending along the connecting groove, each of said halves including tab means which extend outwardly away from the axis.

4,465,127
DEVICE FOR REDUCING THE THERMAL STRESSES IN THE BOTTOM OF A VERTICAL HEAT EXCHANGER

Jean Andro, La Celle Saint-Cloud, and Alain Charbonnel, Vitry, both of France, assignors to Stein Industrie, Villacoublay, France

Filed Apr. 27, 1981, Ser. No. 257,601
Claims priority, application France, Apr. 29, 1980, 80 09634
Int. Cl.³ F28F 7/00
U.S. Cl. 165—81 2 Claims

1. A device for reducing thermal stresses in a bottom of a vertical heat exchanger caused by a primary liquid metal and a secondary liquid metal, comprising:

a tubular plate affixed near said bottom of said vertical heat exchanger;

a chamber defined by said bottom and said tubular plate;

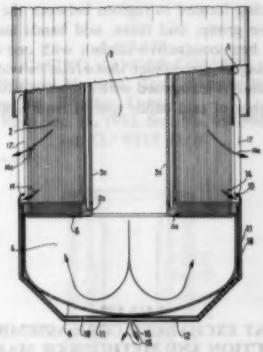
axial conduit means extending through said vertical heat exchanger to said chamber such that said secondary liquid metal is directed into said chamber through said axial conduit means;

a tubular bundle having a plurality of tubes surrounding said axial conduit means, said tubular bundle being mounted on said tubular plate such that said plurality of tubes extend into said chamber;

said vertical heat exchanger having at least one outlet window formed therein above said tubular plate such that a first portion of said primary liquid metal circulating downwardly around said plurality of tubes is directed through said at least one outlet window to exit said vertical heat exchanger;

inner and outer sheets defining an envelope surrounding said bottom, said inner and outer sheets having a spacing therebetween;

said envelope having at least one exit opening disposed at the bottom of said at least one outlet window such that a second portion of said primary liquid metal circulating downwardly around said plurality of tubes is diverted into said at least one exit opening to circulate in said envelope, wherein said second portion of said primary liquid metal



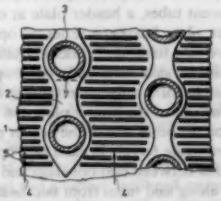
diverted into said at least one exit opening further comprises a liquid metal having a temperature approximately the same as a second temperature of said secondary liquid metal circulating upwardly through said plurality of tubes of said tubular bundle from said chamber such that thermal stresses in said bottom of said vertical heat exchanger are reduced; and

said envelope having at least one output opening such that said second portion of said primary liquid circulating in said envelope exits said vertical heat exchanger through said at least one output opening.

4,465,128
PLATE FLOOR HEAT EXCHANGER

Sándor Krekács, and Zoltán Pálfi, both of Budapest, Hungary, assignors to Országos Köolaj és Gázipari Tröszt, Budapest, Hungary

Filed Apr. 21, 1981, Ser. No. 255,992
Claims priority, application Hungary, Apr. 22, 1980, 977
Int. Cl.³ F28F 1/32
U.S. Cl. 165—151 6 Claims



1. A plate floor heat exchanger comprising:

at least two spaced-apart mutually parallel plates of thermally conductive material;

a plurality of tubes extending generally perpendicularly

through said plates for conducting a first fluid therethrough; and

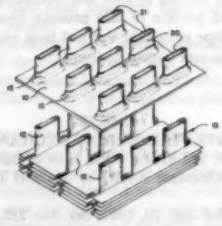
elongated flat spacer bands disposed between said plates and spacing the same apart whereby said plates directly abut opposite faces of said bands, each spacer band being transversed by a respective group of said tubes in a linear row whereby longitudinal edges of said bands define between them flow channels for a second fluid between said plates, the width of each band alternating along the length thereof between regions of greatest width and regions of smaller width, the region of greatest width being located in the region of a respective tube, the regions of smaller width being located in regions between the tubes of the respective group, said tubes, said bands and said plates being in heat conductive contact with one another, said bands being staggered such that a relative wide part of one of said bands is juxtaposed with a relatively narrow part of one another of said bands spaced from said one of said bands.

4,465,129

HEAT EXCHANGER CORE ASSEMBLY CONSTRUCTION AND METHODS OF MAKING THE SAME

Gary L. Baldensperger, Warren, Pa., and John D. Real, Jamestown, N.Y., assignors to Blackstone Corporation, Jamestown, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,990
Int. Cl.³ F28F 9/16
U.S. Cl. 165—153 **6 Claims**



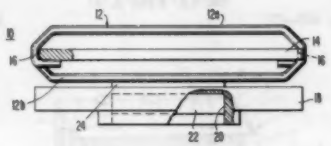
1. A heat exchanger core and header of the fin and tube type characterized by improved resistance to stress failure between tubes and header comprising a plurality of tubes disposed in generally axially parallel and spaced apart relation, a fin assembly between adjacent tubes, a header plate at one end of said tubes, said header plate having a series of openings therein adapted to receive said tubes and generally uniformly spaced from the sidewalls of said tube ends, said openings in the header being upset to form a flange extending away from the fin assembly on one side of the header plate and a curved entry into the opening on the other side of the header plate facing the fin assembly, an elongate ferrule in each said opening substantially filling the area between said openings and said tubes and extending axially along said tubes from said header on the side opposite the fins, said ferrule being provided at one end facing the fin assembly with a generally curved radial flange generally matching and overlaying the curved entry to the openings in the header plate, a metallurgical bond between the ferrules and tubes and between the ferrules and header over substantially their entire contacting areas.

4,465,130

WIRE FORM HEAT EXCHANGE ELEMENT

Samuel R. Romania, Phoenixville, and Grant M. Smith, Bryn Athyn, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 6, 1982, Ser. No. 395,723
Int. Cl.³ F28F 7/00; H01L 23/34
U.S. Cl. 165—185 **9 Claims**



1. A heat exchange element for an integrated circuit package comprising:

a wire form having a plurality of spaced-apart turns, each of said turns exhibiting a substantially elliptic configuration,

a retainer/heat distributor plate,

said wire form being wrapped around said retainer plate in symmetrical fashion, the elliptical vertices of each of said wire form turns contacting the edges of two opposed sides along the perimeter of said retainer plate,

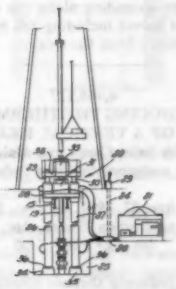
said wire form and said retainer plate providing an integral element.

4,465,131

WELL CASING JACK MECHANISM

George I. Boyadjieff, Anaheim, and Andrew B. Campbell, San Marino, both of Calif., assignors to Varco International, Inc., Orange, Calif.

Division of Ser. No. 169,718, Jul. 17, 1980. This application Nov. 8, 1982, Ser. No. 439,759
Int. Cl.³ E21B 7/20
U.S. Cl. 166—77 **5 Claims**



1. A well rig convertible between a drilling condition and a casing lowering condition and including:

a mast which projects upwardly above the well in both of said conditions;

a rig floor received above the well in both of said conditions;

said rig being operable in said drilling condition to drill a well utilizing a drill string extending along a predetermined axis relative to the mast and through the rig floor and downwardly into the well; and

jacking mechanism which in said casing lowering condition of the rig is at a location near the lower end of said mast, and is operable to lower a string of casing along said axis and into the drilled well;

said jack mechanism including an upper casing supporting unit and a lower casing supporting unit both accesible

from above the rig floor and operable to support the casing string alternately, and a plurality of structures which support said units and project downwardly beneath the level of the rig floor and which include fluid pressure operated piston and cylinder mechanisms projecting downwardly beneath the level of the rig floor for actuating said upper unit upwardly and downwardly relative to the lower unit to progressively lower the string;

said jacking mechanism being constructed to support a casing string having a weight greater than the load supporting capacity of said mast, and to transmit load forces resulting from the weight of said casing string from each of said supporting units downwardly through said structures to the earth, with said mast projecting upwardly above the jacking mechanism, but without transmission of said load forces through the mast or through the rig floor to the earth;

said rig including a rotary table which in said drilling condition of the rig is mounted at a predetermined active position at approximately the level of said floor, and which in said casing lowering condition of the rig is removed from said active position;

said lower casing supporting unit being formed separately from said rotary table and being positionable at approximately said active position of the rotary table in said casing lowering condition of the rig with the rotary table removed from said position;

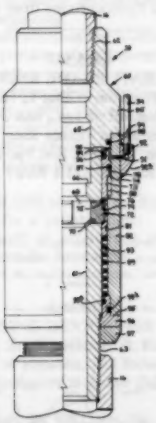
said upper casing supporting unit being formed separately from said rotary table and being receivable above said lower unit and above said active position of the rotary table with the rotary table removed therefrom.

4,465,132

RELEASABLE WELL TOOL STOPPING DEVICES AND SYSTEMS

Albert W. Carroll, and Joseph L. Pearce, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 24, 1982, Ser. No. 444,188
Int. Cl.³ E21B *23/08*
U.S. Cl. 166—156 **17 Claims**



1. A device for stopping a well tool moving through a well flow conductor, said well tool having key means thereon providing abrupt stop shoulder means, said device having means for releasing said well tool for movement past said device, including:

a. tubular body means connectable in said well flow conductor and having internal annular recess means providing abrupt stop shoulder means therein engageable by said abrupt stop shoulder on said key means of said well tool;

b. lateral windows in said body adjacent said abrupt stop shoulder;

c. a lug in each of said windows radially movable between outer and inner positions; and

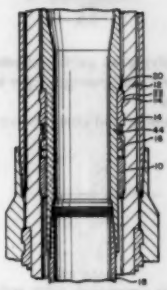
d. pressure responsive means for moving said lugs between their outer and inner position to disengage said key means from said abrupt stop shoulder in said body.

4,465,133

CASING HANGER COLLET

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 15, 1982, Ser. No. 418,503
Int. Cl.³ F21B *43/10*
U.S. Cl. 166—208 **8 Claims**



1. A hanger collet for suspending an inner casing within and from an outer casing comprising: a hollow fully cylindrical body; vertical legs of said cylindrical body formed by a plurality of part-length vertical slots alternately from the top and bottom, the slots overlapping to form the legs; upper and lower return segments thereby formed joining adjacent legs; latch means located on said upper segments and extending outwardly therefrom, the inner surface of at least a portion of said legs being outboard of the inner surface of said segments, whereby a fluid flowpath may be established between adjacent slots behind the legs.

4,465,134

TIE-BACK CONNECTION APPARATUS AND METHOD

Bruce J. Watkins, Palos Verdes, Calif., assignor to Hughes Tool Company, Houston, Tex.

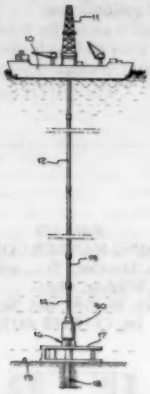
Filed Jul. 26, 1982, Ser. No. 402,180
Int. Cl.³ E21B *43/01*
U.S. Cl. 166—245 **17 Claims**

14. A method of effecting a seal between a riser run from an overhead vessel and a subsea wellhead casing suspended from a casing hanger in a subsea wellhead member, said method comprising the steps of:

lowering a mandrel attached to said riser and having a metal-to-metal type annular seal ring mounted at the lower end thereof into said subsea well member;

landing said annular seal on and in coaxial alignment with

said casing hanger, whereby a connection between said seal ring, said riser, and said casing is effected;



hydraulically applying an axial compressive force to said seal ring, mandrel, and casing hanger to seal said effective connection; and

mechanically retaining said compressive force.

4,465,135

FIRE FLOOD METHOD FOR RECOVERING PETROLEUM FROM OIL RESERVOIRS OF LOW PERMEABILITY AND TEMPERATURE

Krishna Kamath, Chicago, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 3, 1983, Ser. No. 491,133
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—261 **5 Claims**

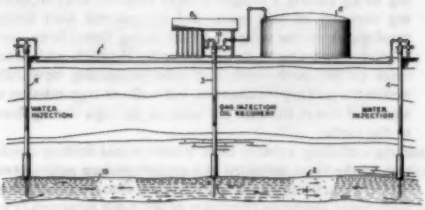
1. A method for recovering petroleum from a subterranean reservoir characterized by relatively low permeability, a temperature of less than the critical temperature of carbon dioxide, and a pore pressure greater than the saturated vapor pressure of carbon dioxide at said temperature, comprising the steps of injecting a combustion supporting medium consisting essentially of oxygen or ozone or a combination thereof into a borehole penetrating the reservoir, initiating combustion of petroleum in the reservoir contiguous to the borehole in the presence of the combustion supporting medium to provide combustion products consisting essentially of gaseous carbon dioxide and water vapor and a radially expanding fire front which together sufficiently increase the mobility of petroleum in the reservoir adjacent to the fire front to form a radially expanding oil bank in the reservoir ahead of the fire front, maintaining a sufficient pressure in the borehole to drive the combustion products ahead of the fire front into the oil bank where the water vapor condenses and the pressure in and temperature of the reservoir are adequate to liquify the gaseous carbon dioxide which dissolves in the petroleum in the reservoir and decreases the viscosity thereof for substantially increasing the mobility of the petroleum in the reservoir beyond the level provided by the heat of combustion and water, and recovering the petroleum from the reservoir through at least one other borehole penetrating the reservoir at a location spaced from the first-mentioned borehole.

4,465,136

PROCESS FOR ENHANCED OIL RECOVERY FROM SUBTERRANEAN FORMATIONS

Lester L. Troutman, Parker, Kans., assignor to Joseph D. Windisch, Overland Park, Kans., a part interest

Filed Jul. 28, 1982, Ser. No. 402,733
Int. Cl.³ E21B *43/20*
U.S. Cl. 166—263 **6 Claims**



1. A method for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation comprising the steps of:

(a) providing a production well penetrating into said formation;

(b) providing a plurality of injection wells surrounding said production well and penetrating into said formation;

(c) injecting water through said injection wells into said formation and substantially continuously water flooding said formation toward said production well;

(d) substantially simultaneously with injecting said water through said injection wells, injecting a mixture of nitrogen and carbon dioxide gas through said production well and into said formation with said water providing a barrier to escape of said gas from a portion of said formation surrounding said production well;

(e) continuing injection of said gas through said production well into said formation and pressurizing said portion of said formation;

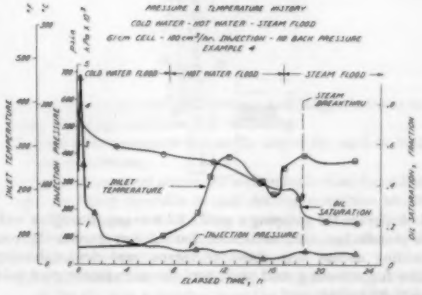
(f) ceasing injection of said gas through said production well and flowing said hydrocarbons from said formation.

4,465,137

VARYING TEMPERATURE OIL RECOVERY METHOD

Alvin J. Sustek, Jr., Houston; Wilbur L. Hall, Bellaire; Thomas S. Teasdale, Houston, all of Tex., and John F. Wiechel, Columbus, Ohio, assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,415
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **3 Claims**



1. A method for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well, which comprises:

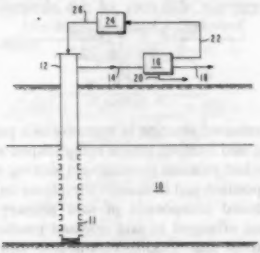
(a) injecting water into the formation via an injection well at a temperature of about 10° C. to about 40° C. while recovering fluid at a production well;
(b) raising the temperature of the water to about 50° C. to about 100° C. while recovering fluid at the production well;
(c) ceasing injection of the water:
(d) injecting steam having a quality of about 10% to about 25% into the formation via an injection well while recovering fluid through the production well; and
(e) gradually increasing the quality of the injected steam to a quality of about 65% to about 90%.

4,465,138

CYCLIC THERMAL SOLVENT RECOVERY METHOD UTILIZING VISBROKEN PRODUCED CRUDE OIL

William C. Hunt, III, Farmers Branch, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,426
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—303 **6 Claims**



1. A method for the recovery of viscous crude oil from a subterranean, viscous crude oil-containing formation penetrated by a well, comprising:
(a) producing crude oil from the formation via said well;
(b) subjecting a portion of said produced crude oil to a thermal visbreaking operation to produce solely by said visbreaking operation a hot visbroken crude oil having a reduced viscosity within the range of 80 to 95 percent;
(c) terminating production and injecting a predetermined amount of said hot visbroken crude oil into the formation via said well to reduce the viscosity of the oil in the formation;
(d) shutting in said well to allow the formation to undergo a soaking period for a variable time;
(e) placing said well on production and recovering fluids including oil from the formation.

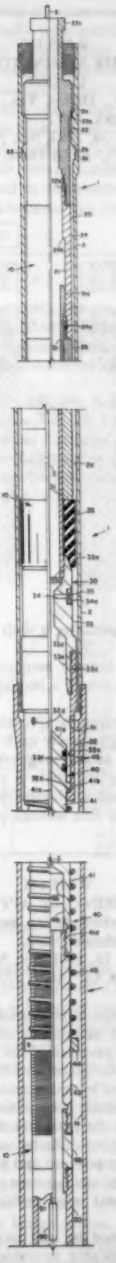
4,465,139

VALVE AND SENSING DEVICE FOR WELL CONDUITS

Vincent F. Marquez, Jr., Woodlands; R. Edward Payne; Thomas L. Loveday, both of Houston, and Robert J. Gunn, Missouri City, all of Tex., assignors to Baker Oil Tools, Inc., Orange, Calif.

Filed Apr. 30, 1982, Ser. No. 373,594
Int. Cl.³ E21B *34/14, 43/12*
U.S. Cl. 166—373 **14 Claims**

1. For use in a well conduit, a flow shut off and testing assembly, comprising: a first annular means defining a valve seat; a second annular means defining a valve head; means mounting said first and second annular means in the conduit for relative axial movement between an open flow position wherein said valve head is spaced from said valve seat and a flow shut off position wherein said valve head is sealingly engaged with said valve seat; a well condition sensing device mounted in the bore of one of said annular means, said device being operated by an auxiliary conduit; and an auxiliary conduit traversing the bores of said first and second annular means and mechanically connected to said one annular means and



operatively extending to said well condition sensing device, whereby longitudinal manipulation of said auxiliary conduit relatively shifts said first and second annular means to said flow shut off position.

4,465,140

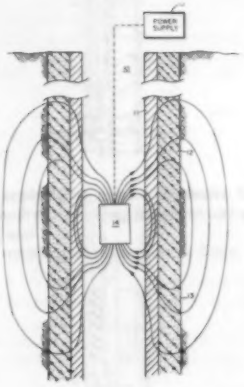
METHOD FOR THE MAGNETIZATION OF WELL CASING

Gustave L. Hoehn, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 426,028

Int. Cl.³ E21B *19/00, 41/00*

U.S. Cl. 166—381 **7 Claims**



1. A method of magnetizing a well casing, comprising the steps of:

(a) moving a direct current magnetizing means relative to the well casing to create a magnetic anomaly along said casing, and

(b) periodically reversing the direction of the magnetic field of said magnetizing means at each of a plurality of successive spaced points as said magnetizing means moves relative to said casing to create a plurality of spaced and alternating north and south monopoles defining a plurality of spaced magnetic flux leakage points in and along said casing.

4,465,141

FIRE SPRINKLER APPARATUS

Wilfred V. Johnson, Oxford, Mass., assignor to U.S. Fire Control Corporation, Rochdale, Mass.

Filed Oct. 13, 1981, Ser. No. 310,897

Int. Cl.³ A62C *37/08*

U.S. Cl. 169—37 **29 Claims**

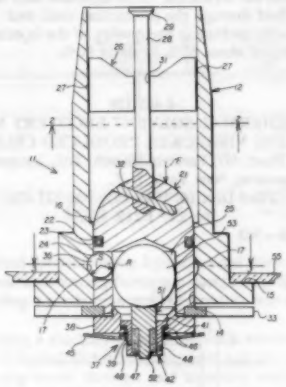
1. Fire sprinkler apparatus comprising:

a tubular body means defining an inlet adapted for connection to a supply of pressurized fire extinguishing fluid and an outlet adapted for placement in a fire protected zone;

a valve means retained by and mounted for reciprocal movement within said body means and receiving a primary force produced by the pressurized fluid at said inlet, said valve means being movable by said force from a closed position to an open position and providing in said closed position a fluid tight seal between said inlet and said outlet and allowing in said open position fluid flow therebetween;

locking means retained by and movable with said valve means and reciprocably movable between an engaged position and a disengaged position, said locking means being shaped and arranged in said engaged position to transfer between said valve means and said body means a substantial first component of said primary force and to thereby prevent relative movement therebetween, and shaped and arranged in said disengaged position to substantially eliminate said first component of force between said valve means and said body means and to allow relative movement therebetween; and

latching means automatically movable from a latched position to a released position in response to a predetermined condition, said latching means being shaped and arranged in said latched position to retain said locking means in said engaged position and to receive therefrom only a substantially reduced component of said primary force, and shaped and arranged in said released position to permit movement of said locking means into said disengaged position.



4,465,142

TRACTOR WITH GROUND ROTATED MEMBER AND DRIVEN WHEEL REVOLUTION COUNTERS AND IMPLEMENT LIFT MEANS OPERATIVELY CONNECTED THERETO

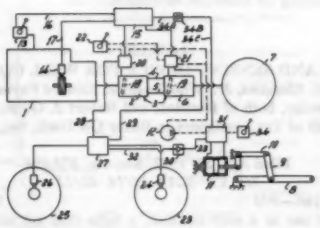
Ary van der Lely, Maasland; Cornelis J. G. Bom, Rozenburg, and Arie Kuipers, Brielle, all of Netherlands, assignors to C. Van der Lely N.V., Maasland, Netherlands

Continuation of Ser. No. 099,732, Dec. 3, 1979, Pat. No. 4,344,499. This application Nov. 27, 1981, Ser. No. 325,128

Claims priority, application Netherlands, Dec. 8, 1978, 7811964

Int. Cl.³ A01B *63/112*

U.S. Cl. 172—7 **5 Claims**



1. A tractor comprising an engine, wheels driven by said engine, a lifting device for attachment of an implement, sensing means including a ground rotated member, control means comprising two like counters which operatively continuously count revolutions of at least one of said driven wheels and the

equivalent revolutions of said ground rotated member from a common starting point and comparator means for providing a signal when there is a preset difference between the respective counted revolutions of said one wheel and the counted said equivalent revolutions of said ground member without regard to the specific respective rotational speeds of said one wheel and said ground member as such, said lifting device including lifting means for raising an implement when attached thereto, means for energizing said lifting means to raise an implement when attached thereto, an operative connection between said control means and said energizing means which is adapted to cause said lifting means to be energized and to raise an implement when attached thereto upon receiving said signal, and means for resetting said counters to said starting point after said lifting means has been energized, each said counter independently counting from its starting point to capacity and returning to zero to continue counting until reset by said resetting means.

4,465,143

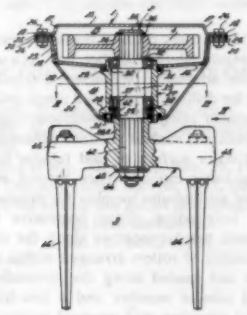
ROTARY HARROWS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 593,501, Jul. 7, 1975, abandoned. This application Jul. 30, 1979, Ser. No. 62,028

Int. Cl.³ A01B *33/06*

U.S. Cl. 172—49.5 **7 Claims**



1. A rotary harrow comprising a frame movable over the ground and said frame including an elongated hollow portion that extends transverse to the direction of travel, a plurality of soil-working members supported on said portion below same and said members being mounted side-by-side on corresponding upwardly extending shafts that are journalled in said frame portion, said portion being comprised of at least three vertically spaced apart wall sheets and said wall sheets forming an upper wall, a bottom wall and an intermediate lower wall, said walls defining two chambers, one above the other, within said portion and said chembers being elongated with their lengths co-extending substantially horizontally and parallel to one another, said shafts being journalled in said bottom and intermediate walls, driving means connected to said shafts and said driving means comprising a pinion on each shaft, said pinion being located in the upper chamber and a bearing housing on said shaft located in the lower chamber, fastening means clamping said bearing housing between said bottom and lower walls, means on the lower end of said bearing housing securing same and preventing that housing from turning relative to said frame portion, said bearing housing having upper and lower shoulders that bear on said bottom and lower walls, and said lower shoulder having a polygonal periphery.

3. A rotary harrow comprising a frame movable over the ground and said frame including an elongated hollow portion that extends transverse to the direction of travel, a plurality of soil-working members supported on said portion below the same and said members being mounted side-by-side on corresponding upwardly extending shafts that are journalled in said frame portion, said portion being comprised of a top sheet wall, an intermediate lower wall and a bottom wall, said walls defining two chambers within said portion, said chambers being elongated and located one above the other, said upper chamber being substantially oblong in cross-section and said lower chamber being substantially trapezoidal in cross-section, the lengths of said chambers co-extending substantially horizontally and parallel to one another, said shafts being journalled in bearings supported in housings located between said lower and bottom walls, driving means comprising pinions on said shafts, said pinions being in mesh with one another and located in said upper chamber, means clamping the bearing housings, in their appointed positions in said lower chamber, the outer rims of all three walls being fastened to one another by fastening means that clamp said housings between the lower and bottom walls.

4,465,144

DRILL RIG MAST STRUCTURE

Hans Gugger, and John Ackland, both of Brisbane, Australia, assignors to Warman International Limited, Artarmon, Australia

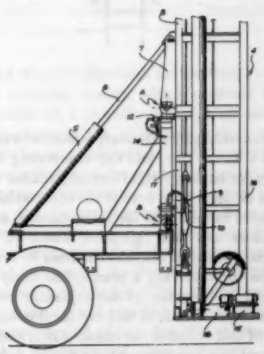
Continuation of Ser. No. 186,298, Sep. 11, 1980, Pat. No. 4,393,944. This application Feb. 22, 1983, Ser. No. 468,218

Claims priority, application Australia, Sep. 18, 1979, PE0543

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ E21B *7/02*

U.S. Cl. 173—28 **2 Claims**



1. A mobile drill rig comprising:

a drill mast;

a pivotal frame pivotally connected at its lower end to a support platform thereby to form a lower pivotal axis, and pivotally connected at its upper end to the drill mast, at a position intermediate the ends of the drill mast, thereby to form the upper pivotal axis;

a fixed frame extending upwardly from the support platform;

a first affixing means adapted to lock releasably the drill mast to the pivotal frame; and

a second affixing means adapted to lock releasably the pivotal frame to the fixed frame whereby when the first affixing means is engaged and the second affixing means is disengaged, the mast is locked to the pivotal frame and can pivot about the lower pivotal axis for drilling at an angle, and when the second affixing means is engaged and the first affixing means is disengaged, the pivotal frame is locked to the fixed frame and the mast can pivot about the upper axis for positioning into its transportation position.

4,465,145

CUSHIONED DRIVE CAP FOR A PILE DRIVER

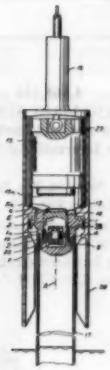
Hans Kühn, Hamburg, Fed. Rep. of Germany, assignor to Kochring GmbH, Ellerau, Fed. Rep. of Germany

Continuation of Ser. No. 127,837, Mar. 6, 1980, abandoned, which is a continuation of Ser. No. 951,308, Oct. 13, 1978, abandoned, which is a continuation of Ser. No. 751,815, Dec. 20, 1976, abandoned. This application Jan. 4, 1982, Ser. No. 337,241

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2557704

Int. Cl.³ B25D 9/00; E21B 11/02

U.S. Cl. 173—131 13 Claims



1. A force-transmitting cap interposable between a pile drive hammer and a driven pile, said cap comprising a hollow rigid cylinder element having a rigid circumferential wall, a closed axial end and an open axial bore at the other axial end; a piston sealingly guided in said bore for reciprocating movement and having an outer end face operative when hit for inwardly depressing the piston; an internal chamber in said bore sealed by said piston for receiving a pressurized body of gas and a body of liquid; at least one closable passage extending from said chamber to the outside of said cap for flowing gas or liquid into and out of said chamber; an impact surface disposed at said other axial end and dimensioned for direct, substantially uncushioned impact transfer, cooperating stop surfaces on said piston and said cylinder element operative to abut against each other for limiting the distance by which the piston can project outwardly beyond said impact surface to a predetermined distance D; means for limiting the pressure in the body of gas to a predetermined pressure value; said piston being guided in said bore for leakage-free inward depression to positions beyond the level of said impact surface; the wall of the cylinder element, the impact surface and the predetermined distance D being dimensioned to permit at said predetermined pressure value a two-step impact transfer transmitting part of the impact energy via the pressurized body of gas and the other part of the impact energy directly via the impact surface as substantially uncushioned force peak; a displaceable separating member accommodated in the interior of the hollow cylinder element and subdividing the interior of the cylinder element into two pressurization compartments; the separating member comprising a slidable internal piston having a central bore and a flexible separating diaphragm having a peripheral edge clamped in a circumferential groove in the inner circumferential surface of the slidable internal piston.

4,465,146

TUBULAR DRILL STRING MEMBER WITH CONTOURED CIRCUMFERENTIAL SURFACE

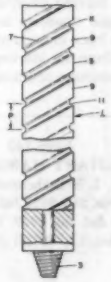
John L. Fitch, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 210,914, Nov. 28, 1980, Pat. No. 4,365,678. This application Sep. 20, 1982, Ser. No. 419,881

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ E21B 7/04, 17/16, 17/22

U.S. Cl. 175—61 1 Claim



1. In a method of rotary drilling, the improvement comprising using an elongate tubular member, such as a section of drill pipe or drill collar adapted to be connected at its opposite ends in a drill string for drilling an extended reach drilled borehole, said tubular member comprising continuous contour-forming means having recessed surface portions depending below the circumferential outer surface of said tubular member being arranged in the outer circumference thereof and extending along the axis of said tubular member for producing a downwardly acting longitudinal thrust responsive to rotational movement of said tubular member along the surface of the borehole, a plurality of rollers arranged within said contour-forming means and spaced along the circumferential outer surface of said tubular member and a low-friction-surface coating material covering said recessed surface portions to facilitate the upward displacement of drilling mud or fluid through said borehole about said tubular member.

4,465,147

METHOD AND MEANS FOR CONTROLLING THE COURSE OF A BORE HOLE

Robijn Feenstra, and Anthony W. Kamp, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1983, Ser. No. 462,266

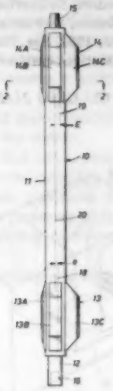
Claims priority, application United Kingdom, Feb. 2, 1982, 8202987

Int. Cl.³ E21B 7/08

U.S. Cl. 175—73 3 Claims

1. Means for controlling the course of a bore hole that is being drilled in underground formations, which means forms a drilling assembly and includes a down-hole motor provided with a housing and an output shaft, a first rigid eccentric stabilizer and a second rigid eccentric stabilizer, both stabilizers being mounted on the housing such that the first stabilizer is located nearer to the output shaft than the second stabilizer, wherein the central axes of the stabilizers are parallel to each

other and offset from the central axis of the output shaft in the same direction, the axis of the first eccentric stabilizer being



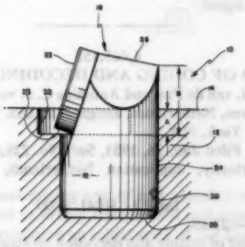
offset from the axis of the output shaft a distance less than the offset of the axis of the second excentric stabilizer.

4,465,148

ECCENTRIC COUNTERBORE FOR DIAMOND INSERT STUD

John F. Morris, Westminster, and Robert V. Worrell, Irvine, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 98,462, Nov. 29, 1979, Pat. No. 4,265,324. This application Apr. 30, 1981, Ser. No. 259,014
The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.
Int. Cl.³ E21B *10/58*
U.S. Cl. 175—329 **5 Claims**



1. A diamond drag bit for cutting boreholes in the earth comprising:

a drag bit body having a face;

a plurality of cylindrical insert holes in the face of the body;

a tungsten carbide and diamond insert stud in each of said insert holes, such an insert stud comprising a generally cylindrical tungsten carbide shank interference fitted into the insert hole and a diamond cutting face on one side of the cylindrical shank, such insert stud being positioned sufficiently deep in its insert hole that a portion of the diamond cutting face is below the face of the body and another portion of the diamond cutting face is above the face of the body; and

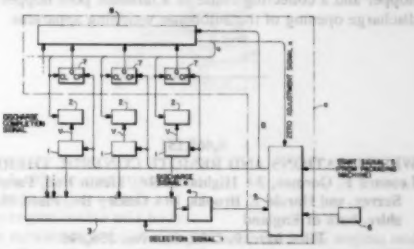
a cutaway relief portion below the face of the body for exposing the entire diamond cutting face while leaving the portion of the cylindrical side of the insert stud opposite the portion of the diamond cutting face below the face of the body supported by a portion of the body adjacent the face of the body.

4,465,149

METHOD OF ZERO ADJUSTMENT FOR COMBINATORIAL WEIGHING OR COUNTING SYSTEM

Kazuo Kawashima, and Kazukiyo Minamida, both of Kurita, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Tokyo, Japan

PCT No. PCT/JP81/00232, 371 Date Apr. 16, 1982, 102(e) Date Apr. 16, 1982, PCT Pub. No. WO82/01065, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 11, 1981, Ser. No. 375,022
Claims priority, application Japan, Sep. 17, 1980, 55-129795
Int. Cl.³ G01D *19/32*
U.S. Cl. 177—1 **7 Claims**



1. A method of zero adjustment for use with a combinatorial weighing or counting system which operates by weighing batches of articles on a plurality of weighing machines, computing combinations of the respective weight values of the batches of articles or combinations of the respective numbers of articles, converted from the respective weight values, in the batches, selecting a combination which is equal or the nearest to a set value, and discharging the articles from the weighing machines corresponding to the selected combination, said method being characterized in that each time combinations are computed and articles are discharged a selected one of said weighing machines which has either discharged the largest number of articles since it was last zero-adjusted and/or for which the longest period of time has elapsed since it was last zero-adjusted, is zero adjusted when it is empty.

4,465,150

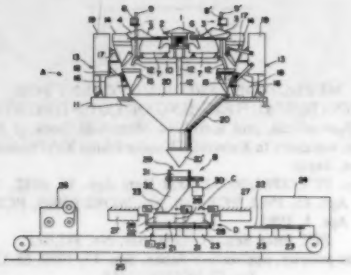
DEVICE FOR CHARGING WEIGHED OUT ARTICLES INTO CONTAINER IN AUTOMATIC WEIGHING APPARATUS

Seishi Matsumoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 10, 1982, Ser. No. 416,469
Claims priority, application Japan, Sep. 14, 1981, 56-145120
Int. Cl.³ G01G *19/22*; B65B *1/04, 3/04*
U.S. Cl. 177—25 **3 Claims**

1. In conjunction with an automatic weighing apparatus, a device for charging weighed out articles from the automatic weighing apparatus into a container consisting of a plurality of integral and contiguous sections, said device comprising, in combination, a shutter plate mounted in close proximity to the upper surface of the container, a timing hopper having said shutter plate as a bottom and defining storage compartments in

positions corresponding to respective ones of said container sections, and an allocation unit mounted between said timing



hopper and a collecting chute or a terminal pool hopper as a discharge opening of the automatic weighing apparatus.

4,465,151

WEIGHSTATIONS AND REMOTE CONTROL THEREOF

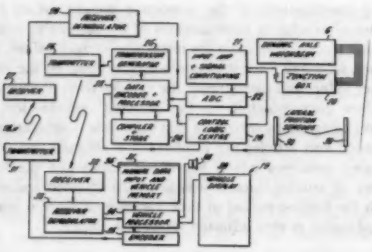
Leonard F. Gorman, 3A Highlands Rd., Heath End, Farnham, Surrey, and Harold E. Brooks, 10A Oakley Dr., Fleet, Hampshire, both of England

Filed Mar. 9, 1982, Ser. No. 356,396

Claims priority, application United Kingdom, Mar. 10, 1981, 8107462

Int. Cl.³ G01G *19/02*

U.S. Cl. 177—133 **2 Claims**



1. An axle-weighing system comprising in combination:

(a) in a vehicle, a remote controller comprising:

(1) means for transmitting a command signal and a signal denoting the number of axles possessed by the vehicle,

(2) means for receiving signals, and

(3) means coupled to the receiving means for processing received signals to provide indications of the loading on the axles of the vehicle, and

(b) a weighstation comprising:

(1) a weighbeam,

(2) a receiver for receiving said command signal and said signal denoting the number of axles possessed by the vehicle,

(3) means coupled to the beam and responsive to the command signal to provide signals denoting the individual axle loadings of the vehicle, and

(4) a transmitter for transmitting the last-mentioned signals to said means for receiving in said remote controller.

4,465,152

PRECISION BALANCE WITH IMPROVED IMMUNITY TO TEMPERATURE AND PRESSURE VARIATIONS

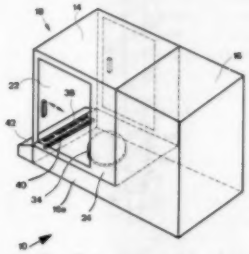
Albert Schmitter, Maennedorf, Switzerland, assignor to Mettler Instruments AG, Greifensee, Switzerland

Filed Nov. 15, 1982, Ser. No. 441,442

Claims priority, application Switzerland, Jul. 29, 1982, 4589/82

Int. Cl.³ G01G *21/28*

U.S. Cl. 177—180 **13 Claims**



1. In a precision balance furnishing a weight signal, said balance having weighing apparatus comprising a weighing dish, a weighing mechanism, means connecting said weighing apparatus to said weighing mechanism, a weighing chamber having a plurality of surfaces enclosing said dish, a second chamber enclosing said weighing mechanism and having a common wall with said weighing chamber, said common wall having at least one through-passage for accomodating said connecting means, the improvement comprising

at least one unobstructed through-opening spaced apart from said at least one through-passage and located away from said weighing dish in one of said surfaces for permitting airflow in said weighing chamber in a region away from said weighing dish, whereby the temperature and pressure in said weighing chamber are equalized with those of said second chamber without affecting said weight signal.

4,465,153

METHOD OF CODING AND DECODING MESSAGES

Andries J. M. van de Pas, and Antonius C. J. van den Ende, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,496

Claims priority, application Netherlands, Feb. 4, 1980, 8000675

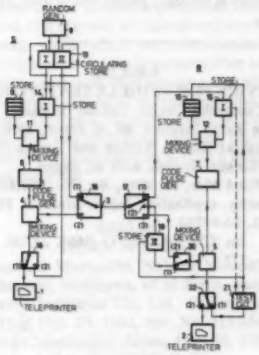
Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.16 **1 Claim**

1. A method of coding and decoding messages wherein clear message pulses are mixed with code pulses at a transmitting station to form coded message pulses and wherein the coded message pulses are mixed with identical code pulses at a receiving station to obtain the clear message pulses, the code pulses in the transmitting and receiving stations being generated by a code generator, the initial state of which determines the code pulse sequence, there being numerous possible initial states, and the initial state, in both the transmitting and receiving stations, being determined from a first state information, designated as one of a plurality of basic keys stored at both the transmitting and receiving stations, and a second state information, designated a message key determined at random in the transmitting station and transmitted to the receiving station; characterized in that, prior to processing the clear message pulses, the method comprises the steps: In the transmitting station;

(a) transmitting a first portion of the message key to the receiving station;

(b) selecting one of said plurality of basic keys and mixing said first portion with said selected basic key for determining an initial state for the code generator which then generates a resulting code pulse sequence;
(c) mixing a second portion of the message key, followed by a plurality of check characters derived from the second portion, with said resulting code pulse sequence from the code generator forming a coded second portion of the message key;
(d) transmitting said coded second portion of the message key to the receiving station;
(e) combining said first and second portions of the message key with said selected basic key to determine a final intitial state of said code generator for coding said message pulses; and in the receiving station:
(f) receiving and storing said first portion of the message key;
(g) receiving and storing said coded second portion of the message key;



(h) selecting and mixing one of said plurality of basic keys stored at said receiving station with said stored first portion for determining an initial state of the code generator which then generates a resulting code pulse sequence;
(i) mixing said stored coded second portion with said resulting code pulse sequence to decode said coded second portion;
(j) generating check characters from said decoded second portion and comparing the generated check characters with those following the second portion;
(k) repeating steps h-j with another one of said plurality of basic keys if the results of said comparison are not above a prescribed threshold level, which level would be indicative of a proper decoding and that the selected basic key would be the same as the selected basic key in the transmitting station; and
(l) storing said decoded second portion of the message key for combination with said stored first portion in preparation for the proper decoding of the forthcoming coded message pulses.

4,465,154

VEHICLE GAS EXTRACTOR

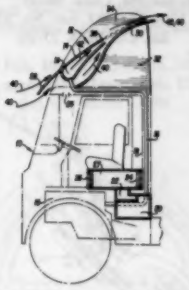
Mitja V. Hinderks, 15 Adamson Rd., London NW3, England

Continuation-in-part of Ser. No. 533,522, Jun. 29, 1979, abandoned, which is a continuation of Ser. No. 790,887, Apr. 26, 1977, abandoned. This application Mar. 16, 1981, Ser. No. 244,235

The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.

Int. Cl.³ B60K *13/06*; F01N *7/00*; B62D *35/00*

U.S. Cl. 180—89.2 **8 Claims**



1. A vehicle, comprising:
a body having a roof;
an engine within said body;
an exhaust pipe for carrying exhaust from said engine; said exhaust pipe extending to the roof of said body; and
means for regulating air flow past a payload pulled by said vehicle, comprising an airfoil-shaped silencer in fluid communication with said exhaust pipe, above said roof, having a leading edge and a trailing edge higher than said leading edge, said trailing edge including an elongate discharge aperture extending in the direction of the width of said vehicle.

4,465,155

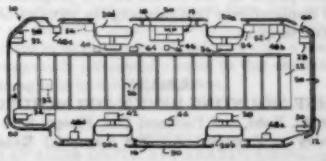
AUTOMATED OPERATORLESS VEHICLES

Marshall S. Collins, 316 Jasper Dr., Beckley, W. Va. 25801

Filed Jun. 17, 1981, Ser. No. 274,658

Int. Cl.³ B62D *1/00*

U.S. Cl. 180—169 **55 Claims**



1. A vehicle guidance control system for controlling the movement of a vehicle along a selected path through an arrangement of corridors comprising a first corridor and a second corridor intersecting said first corridor, said second corridor extending on either side of said first corridor, the vehicle disposed within one of said first and second corridors, said vehicle guidance system comprising:
(a) first and second sensors disposed respectively at a leading position and a trailing position with respect to the movement of the vehicle along said selected path and on a single side of the vehicle, said first and second sensors providing respectively first and second signals, each indicative of the distance from the said single side of the vehicle

to a corridor surface disposed adjacent to said single side; and

(b) comparison means for comparing said first and second signals and if said first signal is greater by a predetermined amount than said second signal, for providing a signal indicative of the presence of the other of said first and second corridors.

4,465,156

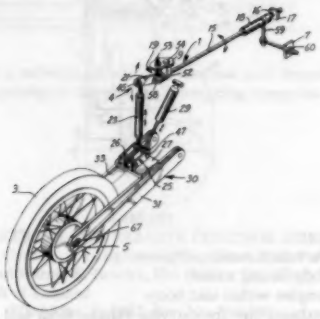
MOTORCYCLE SUSPENSION SYSTEM

Robert H. Richardson, and Wayne Richardson, both of 862 N. Pleasant St., Southington, Conn. 06489

Filed May 17, 1982, Ser. No. 378,845

Int. Cl.³ B62K *25/26*

U.S. Cl. 180—227 **7 Claims**



1. An improved motorcycle suspension system for a motorcycle having a motorcycle frame for supporting the parts of said motorcycle comprising a single elongated substantially straight torsion bar having a first end and a second end; a rear wheel axle support attached pivotally to said motorcycle frame; means for holding said first end of said torsion bar to said frame to prevent rotation thereof; a multiplying linkage means including a moment arm lever for reversibly converting the substantially vertical motion of said rear wheel axle support caused by irregularities in the surface over which said motorcycle is ridden into a torque applied to said second end of said torsion bar causing said torsion bar to provide a progressively larger opposing torque in reaction to said applied torque by progressively shortening the effective moment of the said arm lever and requiring progressively more force to apply an equivalent torque to said torsion bar for progressively larger upward displacements thus damping the motions of said rear wheel axle support.

4,465,157

ENGINE MOUNTING DEVICE FOR MOTORCYCLE

Yoji Onishi, Kobe, and Toshinori Oki, Hyogo, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Sep. 3, 1982, Ser. No. 414,736

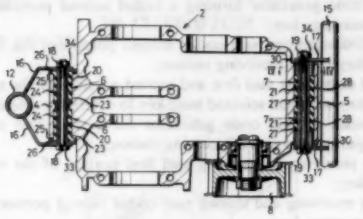
Claims priority, application Japan, Sep. 7, 1981, 56-132921[U]

Int. Cl.³ B60K *5/12*

U.S. Cl. 180—228 **5 Claims**

1. In a motorcycle comprising a motorcycle body, an engine connected to the motorcycle body and having mounting bores, front and rear wheels rotationally connected to the body, a drive sprocket wheel mounted on one side of the engine, a follower sprocket wheel mounted on the rear wheel, a serrated belt or chain trained over the drive sprocket wheel and the follower sprocket wheel, and an engine mounting device including a plurality of support rods connected to and extending crosswise of the motorcycle body, a plurality of bushes fitted over said support rods, and a plurality of cylindrical vibration absorbing rubber members situated over said bushes inside the mounting bores formed in the engine,

wherein the improvement of the engine mounting device comprises spacers of a thickness smaller than the thickness of said vibration absorbing rubber members, each said spacer being formed of a hard material of high surface



pressure strength, each said spacer being mounted outside of said vibration absorbing rubbers and located between an outer end of each said bush and inside of each said mounting bore at least in a portion in which the vibration absorbing rubber member is most compressed when the engine body is strongly pulled rearwardly of the motorcycle body.

4,465,158

SAFETY DEVICE FOR VEHICLE SEAT WITH VIBRATOR

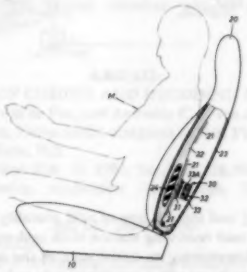
Shinichiro Yamazaki, Anjo; Takaki Manabe, Chiryu, and Toranosuke Kato, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 18, 1982, Ser. No. 359,431

Claims priority, application Japan, Mar. 25, 1981, 56-44557; Mar. 25, 1981, 56-44558

Int. Cl.³ A47C *1/00*; B60K *28/00*

U.S. Cl. 180—271 **5 Claims**



1. A safety device for a vehicle seat for use in automotive vehicles assembled with a parking brake, said vehicle seat being equipped in its back-rest with an electromagnetically operated vibrator which is arranged to be activated by energization of an electric control circuit for period1cally supplying an electric current to said vibrator from an electric power source, the safety device comprising:

switch means arranged between said electric control circuit and said electric power source and cooperating with said parking brake so as to be opened when said parking brake is released and to be closed in response to activation of said parking brake; and

means for energizing said electric control circuit in response to closing of said switch means to activate said vibrator when the vehicle is in a parked condition and for deener-

gizing said electric control circuit in response to opening of said switch means to deactivate said vibrator.

4,465,159

NONLINEAR EAR PROTECTING DEVICE

John P. Stallings, Indianapolis, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Mar. 11, 1983, Ser. No. 474,617
Int. Cl.³ N04R *25/00*
U.S. Cl. 181—129 **11 Claims**

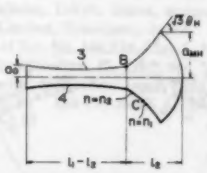
1. In an ear protecting device for protecting a wearer from annoying and/or damaging noise levels, which device is comprised of: a connecting member and a pair of muffs suitable for covering a wearer's ears, said muffs being suspended from opposite portions of the connecting member, said muffs each being comprised of a cup and an earseal cushion: the improvement comprising; muffs which are characterized by greater attenuation in high intensity environments than in a low intensity environments, each said muff having a cup which is at least partially porous, each said muff having a specific airflow resistance of between 3,000 and 105,000 SI rayls, at least one porous portion of each said cup defining a tortuous path, said at least one porous portion of each said cup having a mean pore size of at least 160 micrometers.

4,465,160

HORN SPEAKER

Akihisa Kawamura, Moriguchi; Noboru Mikami, Osaka, and Atsushi Yukiyoshi, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 27, 1981, Ser. No. 315,454
Claims priority, application Japan, Oct. 30, 1980, 55-153504
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—192 **6 Claims**



1. A horn speaker comprising a horn defined by four wall surfaces, each wall surface between an opening end of the horn and a throat satisfying the condition of:

$$a=a_0(1+\alpha x)^n$$

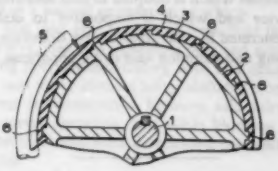
where, a_0 represents the size of said throat, a represents the size of cross-section at a distance x from said throat and α represents a divergence coefficient, n being a value taking $n_1(n_1 \geqq 2)$ at the open end of the horn and $n_2(n_2 > n_1)$ at the throat side of the horn; said horn further satisfying a condition that the angle of tangential line at the open end of said horn falls between 1.5θ and 2.0θ, where θ represents a half of the directivity angle which is the angle causing a 6 dB drop of the sound pressure from the sound pressure on the axis of the polar directivity characteristics, and wherein a directivity angle θ_H in the horizontal direction and a directivity angle θ_V in the vertical direction are not equal to each other, and the surfaces of the walls of a greater tangential angle at the horn opening are formed to have a different curvature at the portion thereof between said throat and a point spaced along the horn axis by a distance l_2 from the horn opening from a curvature at the portion thereof between said point and said open end of said horn.

4,465,161

ELEVATOR WINDING DEVICE

Kazutoshi Ohta, and Sadayuki Ohtomi, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,842
Claims priority, application Japan, Feb. 17, 1981, 56-21910
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—20 **5 Claims**



1. A winding device of an elevator comprising:
(a) an output shaft rotatably supported,
(b) a drive sheave secured around said output shaft and formed with a sheave groove in the periphery thereof,
(c) projected teeth provided spaced apart from each other in a circumferential direction of said drive sheave and projecting into said groove,
(d) a non-metal lining fastened to said groove to cover said projected teeth,
(e) a main rope stretched over said groove while coming to contact with said lining and lifting a cage at one end thereof,
(f) said main rope coming to contact with said lining at a stretching angle of more than 120° with respect to said sheave, said projected teeth being at least four which are spaced equidistantly within said groove whereby said main rope is always positioned for engaging at least two of said projected teeth in case of lining wear, and
(g) said projected teeth being exposed to engage said main rope when said lining is removed from said groove by wear or abnormal condition whereby the tractive force generated by said groove and said main rope is maintained at a magnitude substantially equal to that obtained when the lining is in its normal condition.

4,465,162

ELEVATOR DRIVE APPARATUS USING A TRACTION-TYPE SPEED CHANGE GEAR

Satoru Yokota, Ichinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

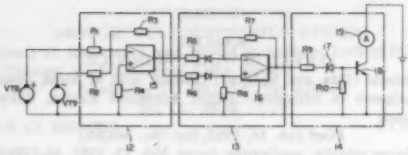
Filed Dec. 6, 1982, Ser. No. 447,003
Claims priority, application Japan, Dec. 28, 1981, 56/211348
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R **3 Claims**

1. A drive apparatus for elevators comprising:
a traction-type speed change gear having an input and an output shaft;
an electric motor connected to said input shaft and disposed so as to rotate said input shaft;
a first detector means for detecting the rate of rotation of said input shaft and for producing an output corresponding to said rate of rotation of said input shaft;

a second detector means for detecting the rate of rotation of said output shaft and for producing an output corresponding to said rate of rotation of said output shaft;

an abnormality detection device which is coupled to said first and second detector means for comparing said outputs of said first and second detector means and for generating an electrical signal when the difference between said outputs falls outside of a predetermined range; and

a control means which is coupled to said abnormality detection device and which is responsive to said electrical signal generated by said abnormality detection device for controlling and stopping said drive apparatus.



4,465,163

FLOATING DISK BRAKE

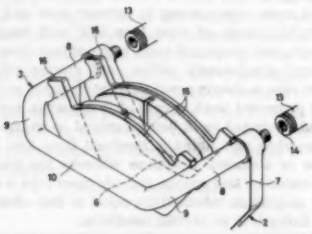
Atsuo Matsumoto, Hyogo, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Mar. 3, 1982, Ser. No. 354,266

Claims priority, application Japan, Mar. 9, 1981, 56-35522

Int. Cl.³ F16D 65/02

U.S. Cl. 188—73.39 8 Claims



1. A disc brake comprising: a pair of brake pads adapted to be disposed on opposite sides of an associated brake rotor, actuating means for moving said brake pads into engagement with the brake rotor, a torque member including a combined unit of a stationary member and a torque receiving member formed by bending a metal rod, said stationary member having a connecting portion for connection to said torque receiving member, said torque receiving member including torque receiving sections arranged in parallel with each other, and an integral bridge section bridging and connecting said torque receiving sections, and said brake pads being slidably engaged with said torque receiving sections for holding said brake pads against rotation with the brake disc upon engagement therewith, said torque receiving section being connected to said connecting portion of said stationary member at a point spaced from said bridge section, so as to be united therewith.

4,465,164

PIN SLIDING DISC BRAKE

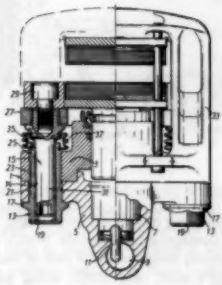
Robert A. Anderson, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 23, 1982, Ser. No. 351,423

Claims priority, application United Kingdom, Mar. 3, 1981, 8106573

Int. Cl.³ F16D 65/18; B25G 3/36

U.S. Cl. 188—73.44 9 Claims



1. A pin sliding disc brake comprising a caliper and a torque taking member, a sliding pin connection interconnecting said caliper and torque taking member and including a pin connected to the torque taking member, said caliper comprising at least two caliper body sections, a bolt clamping said body sections together and having a bore extending axially therethrough, said bore receiving said pin connected to the torque taking member and serving as a guide for said pin whereby said bolt serves both as a caliper clamp and also as a pin guide.

4,465,165

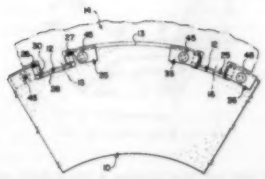
BRAKE APPARATUS

Lowell D. Bok, Anna, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,899

Int. Cl.³ F16D 65/10

U.S. Cl. 188—218 XL 8 Claims



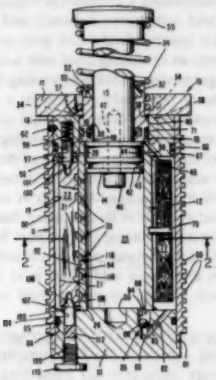
7. An annular brake disc made from a carbon composite material having a plurality of circumferentially spaced slots around one periphery thereof, each of said slots having a bottom surface and two side walls, an insert located within each of said slots, a plurality of circumferentially spaced cap members mounted around said one periphery of said discs adjacent to said slots, each of said cap members overlying a portion of said slot to thereby confine said inserts in said slots, each of said side walls of said slots contains a pair of faces that taper towards the opposite side wall presenting a wedge shaped abutment, and the outer walls of said inserts are grooved to complimentarily engage said wedge shaped abutment.

4,465,166

ADJUSTABLE TEMPERATURE COMPENSATING CONSTANT FORCE SHOCK ABSORBER

James D. Moore, Redondo Beach, Calif., assignor to J. D. Moore Engineering, Inc., Torrance, Calif.

Filed Feb. 24, 1982, Ser. No. 351,754
Int. Cl.³ F16F 9/52
U.S. Cl. 188—278 10 Claims



10. In a shock absorber for providing a decelerating force to a machine part by means of a piston which forces hydraulic fluid from a pressure chamber to a reservoir through a plurality of orifices formed by a plurality of apertures in said pressure chamber and a metering member which is manually adjustable to increase or decrease the size of said orifices for varying size loads wherein the improvement comprises:

a thermal expansion plug which adjusts the position of said metering member with respect to said apertures thereby increasing or decreasing the size of said plurality of orifices as a function of temperature; and

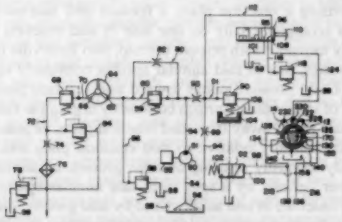
said apertures in said pressure chamber are each formed with a flat sidewall and two concave sidewalls.

4,465,167

AUTOMATIC TRANSMISSION SELECTOR VALVE

Kazuyoshi Fujioka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 146,936, May 5, 1980, abandoned. This application Nov. 17, 1981, Ser. No. 322,252
Claims priority, application Japan, May 16, 1979, 54-65965
Int. Cl.³ B60K 41/22
U.S. Cl. 192—3.57 15 Claims



1. A selector valve for controlling fluid flow between a fluid pressure source and first and second operating ports, said selector valve comprising:

(A) a valve body having:

(a) a bore therein,

(b) an inlet port,

(c) a first operating port,

(d) a second operating port, and

(e) a drain port, each of said ports communicating with said bore; and

(B) a valve element removably positioned within said bore in a first orientation in which:

(a) said inlet port is blocked from fluid flow through said valve, said first operating port and said second operating port communicating with said drain port,

(b) said valve element being shiftable clockwise establishing communication between said inlet port and said first operating port while blocking communication between said first operating port and said drain port, and

(c) said valve element being shiftable counter-clockwise establishing communication between said inlet port and said second operating port while blocking communication between said second operating port and said drain port;

and in a second orientation in which:

(a) said inlet port is blocked from fluid flow through said valve, said first operating port and said second operating port communicating with said drain port,

(b) said valve element being shiftable clockwise establishing communication between said inlet port and said second operating port while blocking communication between said second operating port and said drain port, and

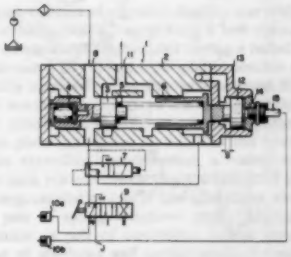
(c) said valve element being shiftable counter-clockwise establishing communication between said inlet port and said first operating port while blocking communication between said first operating port and said drain port.

4,465,168

PRESSURE CONTROL SYSTEM FOR A TRANSMISSION

Masayuki Sato, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 325,013
Int. Cl.³ F16D 25/10; B60K 41/00
U.S. Cl. 192—3.57 3 Claims



1. In a pressure control system for a transmission including a plurality of fluid-actuated clutches which may be engaged and disengaged to obtain selected ones of a plurality of drive ratios, the combination comprising:

(a) a source of fluid under pressure;

(b) a selector valve disposed between said source of fluid and said clutches for directing the fluid to selected ones thereof to shift between said drive ratios;

(c) a modulation valve disposed at the flow-path between said source of fluid and said selector valve for modulating the pressure of fluid supplied to any of said clutches through said selector valve, said modulation valve comprising:

a valve body having an axial bore formed therein, said valve body also having formed therein an inlet port connected with said source of fluid, a first outlet port

connected with said clutches through said selector valve, a second outlet port and a back pressure port;

a spool slidably mounted in said bore defining a first chamber at one end thereof, the first chamber being in constant communication with the inlet port;

first biasing means for biasing said spool in a predetermined direction for establishing the communication between the inlet port and the second outlet port;

second biasing means for biasing said spool in the opposite direction for blocking the communication between the inlet port and the second outlet port, said second biasing means being communicated with the back pressure port and operated by fluid introduced therethrough;

a cover housing fitted to an end of said valve body opposite said spool, said cover housing having formed therein a second chamber and an auxiliary port connected with one of said clutches having a maximum fluid filling time; and

a piston slidably mounted in said second chamber for biasing said second biasing means in the opposite direction when fluid is introduced into said second chamber through said auxiliary port; and

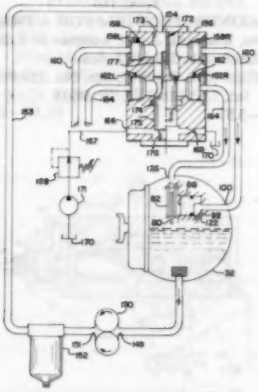
(d) pilot-operated valve means disposed at the flow path between said modulation valve and said selector valve for introducing fluid into said back pressure port.

4,465,169

WHEEL BRAKE AND LUBRICATION SYSTEM FOR A VEHICLE

Kenneth E. Houtz, Streamwood, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 30, 1981, Ser. No. 336,003
Int. Cl.³ B60K *41/26*; F16D *55/00, 13/74*
U.S. Cl. 192—4 A **17 Claims**



1. In a vehicle including a source of power, an axle assembly coupled with ground support means having a lubricating fluid input port, and fluid actuated brake means associated with said axle assembly for effecting braking of said ground support means, said brake means having an actuating fluid input port, a fluid system for providing actuating fluid for said brake means and lubricating fluid for said axle assembly comprising:

an operating fluid reservoir disposed on said vehicle and having an operating fluid contained therein;

an operating fluid pump operatively associated with said source of power and having an inlet in fluid communication with said reservoir and an outlet for supplying an operating fluid from said reservoir through said fluid system;

a spool valve including a valve bore enclosed on both ends and having an operating fluid input port intersecting the valve bore and in fluid communication with said operating fluid pump outlet, said valve having a first operating fluid output port intersecting the valve bore and in fluid communication with said brake means actuating fluid input port and a second operating fluid output port intersecting the valve bore and in fluid communication with said lubricating fluid input port, said valve further having a control fluid input port intersecting said valve bore adjacent the end thereof remote from said input port;

a valve spool comprising a cylindrical body portion slidably disposed in said valve bore between said operating fluid ports and said control fluid input port and dividing said valve bore into an operating fluid side and a control fluid side, an elongated stem portion extending from the operating fluid side of said body portion to a distal end, said distal end providing an operating fluid side stop for said spool, and a second stem portion extending from said body to the control fluid side to a distal end defining a control side stop for said spool, said body and stem portion being so sized relative to the axial location of said output ports that when said spool is at its operating fluid side stop said first brake means actuating output port is open and said second lubricating output port is closed by said spool body portion and when said spool is at its control fluid side stop, both of said operating fluid output ports are open; and

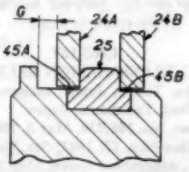
a selectively engageable control fluid pressure source associated with said vehicle in fluid communication with said control pressure input port for furnishing a control fluid from said source to said control pressure input port.

4,465,170

CLUTCH MECHANISM FOR TWO-PLATE CLUTCHES SUITABLE FOR AUTOMOTIVE VEHICLES

Aldo Marchisio, Moncalieri, Italy, assignor to Valeo SA, Paris, France

Filed Oct. 26, 1981, Ser. No. 314,990
Claims priority, application France, Oct. 24, 1980, 80 22766
Int. Cl.³ F16D *21/08, 13/22, 13/48*
U.S. Cl. 192—48.7 **6 Claims**



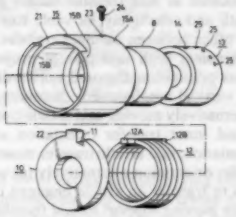
1. A clutch mechanism for an automotive friction clutch of the type having two friction disks, said clutch mechanism comprising a reaction plate, a friction disk and two pressure plates arranged axially on one side of said reaction plate and axially movable with respect thereto, two Belleville type annular springs, one of said annular springs constantly urging said one of said pressure plates toward said reaction plate and the other of said annular springs constantly urging the other of said pressure plates away from said reaction plate, an annular member fixed axially relative to said reaction plate and having a radially inwardly opening annular groove, an annular spacer member defined by a split ring, said annular spacer member being received in and axially fixed by said groove, said annular springs bearing against axially spaced portions on said annular spacer member, said annular spacer being elastically radially deformable between a deployed position for engagement in said groove and a retracted position for removal from said groove, and blocking means for maintaining said annular spacer in its deployed position.

4,465,171

COMPACT ELECTROMAGNETIC SPRING-WOUND CLUTCH

Kinichi Koyama, Kiryu, Japan, assignor to Ogura Clutch Co., Ltd., Kiryu, Japan

Filed Apr. 7, 1982, Ser. No. 366,195
Claims priority, application Japan, Apr. 10, 1981, 56-54079; Sep. 3, 1981, 56-131340[U]
Int. Cl.³ F16D 27/10, 13/08
U.S. Cl. 192—81 C 11 Claims



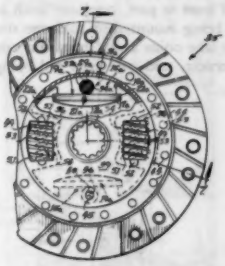
1. An electromagnetic spring-wound clutch comprising: a first rotary member having a tubular portion and an annular enlarged portion radially outwardly extending from said tubular portion at an intermediate location thereof, said enlarged portion being directly fitted on said tubular portion and secured thereto for rotation in unison therewith and having one end thereof formed with a radially extending annular flange; a stationary field core arranged at said one end of said enlarged portion of said first rotary member, said field core having a central through hole through which said tubular portion of said first rotary member is rotatably fitted in a manner concentric with said field core; and electromagnetic coil carried by said field core; a second rotary member arranged at the other end of said enlarged portion of said first rotary member and rotatably disposed around and fitted on said tubular portion of said first rotary member in a manner concentric with said first rotary member, said enlarged portion of said first rotary member being smaller in outer diameter than said second rotary member; a non-magnetic annular member disposed around and rigidly fitted on an outer periphery of said enlarged portion of said first rotary member at a location spaced from said annular flange, for rotation in unison with said first rotary member; said non-magnetic annular member having substantially the same outer diameter with said second rotary member; an annular armature member disposed around said enlarged portion of said first rotary member and fitted in an annular recess defined between said annular flange and said non-magnetic annular member for axial movement therebetween, said armature member being substantially equal in outer diameter to said field core, said non-magnetic annular member being smaller in outer diameter than said armature member; said annular flange being located closer to said armature member than an end face of said field core associated therewith; and a coil spring wound on outer peripheries of said second rotary member and said non-magnetic annular member, said coil spring having one end engaging said second rotary member and the other end said armature member, respectively; whereby energization of said electromagnetic coil causes magnetic attraction of said armature member toward said annular flange of said enlarged portion of said first rotary member into frictional engagement with said first rotary member, said frictional engagement of said armature member with said first rotary member causing gripping engagement of said coil spring with said second rotary member and said non-magnetic annular member to achieve driving coupling of said first and second rotary members.

4,465,172

CLUTCH DISC WITH A VARIABLE TORSIONAL DAMPER

Sidney U. Gatewood, Roseville, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 28, 1981, Ser. No. 296,943
Int. Cl.³ F16D 3/12, 13/64
U.S. Cl. 192—106.2 13 Claims



1. A variable torsional vibration damper assembly for utilization in a vehicle clutch, comprising a hub operatively connected to torque output means and having a radial flange including a pair of diametrically opposed peripheral notches and a pair of diametrically opposed spring notches removed 90° from said peripheral notches, each peripheral notch having an overhanging shoulder at each end forming a slot, an elongated flat spring positioned in each notch with the opposite ends supported in said opposed slots, a concave edge extending between said opposed slots to allow inward deflection of said flat spring, a pair of side plates journalled on said hub and having two spacer pins extending therebetween, a rotary member supported on each pin and contacting the center of a flat spring and causing deflection thereof upon movement of said rotary member relative thereto, each side plate having a pair of spring windows axially aligned with said spring notches, a pair of concentric helical springs in each aligned set of windows and spring notch, and clutch facings carried on one of said side plates.

6. A variable torsional vibration damper assembly for utilization in a vehicle clutch, comprising a hub operatively connected to torque output means and having a radial flange with a pair of diametrically opposed peripheral notches and a pair of diametrically opposed spring notches removed 90° from said peripheral notches, an elongated flat spring positioned in each peripheral notch with the opposite ends supported therein, a pair of side plates journalled on said hub and having a pair of spacer pins extending therebetween, a rotary member supported on each pin and contacting the center of a flat spring, clutch facings carried on one of said side plates, each side plate having a pair of spring windows axially aligned with said spring notches, a pair of concentric helical springs in each aligned set of windows and spring notch, a tapered groove formed between said hub flange and at least one side plate adjacent the hub barrel, and a plurality of steel balls received in said tapered groove.

4,465,173

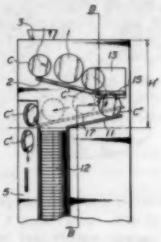
COIN SELECTOR

Toshinori Domen, and Fumio Masuda, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Jun. 9, 1981, Ser. No. 272,066
Claims priority, application Japan, Jun. 11, 1980, 55-77700
Int. Cl.³ G07D 5/08
U.S. Cl. 194—100 A 8 Claims

6. A compact coin selector having a coin rail interposed between a main plate and a bracket, a true coin rail and a false coin rail which are arranged on the downstream side of said coin rail, a coin judging section for judging whether a coin

moving along said coin rail is true or false, a gate lever controlled by a command issued from said coin judging section to selectively determine movement of the inserted coin to said true coin rail or to said false coin rail, said coin selector comprising an opening provided in said main plate and disposed on the downstream side of said coin rail, a coin reservoir mounted adjacent the downstream end of said true coin rail and immediately adjacent one surface of said main plate and laterally displaced from said opening, said coin reservoir being disposed below and, at least in part, coplanar with said coin rail, said true coin rail being mounted on said one surface of said main plate to guide true coins away from said opening and toward said coin reservoir, said true coin rail being disposed below



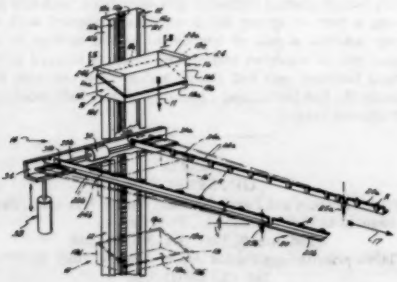
and, at least in part, coplanar with said coin rail, said false coin rail being mounted on the other surface of said main plate to guide false coins away from said opening and toward a false coin area which is displaced laterally from said opening and being mounted in a manner that one end of said false coin rail is adjacent to said opening, so that the false coin moving down along said coin rail is led to said false coin rail through said opening by said gate lever, and said false coin rail being disposed below the level of said coin rail so the vertical distance between the lower end of said coin rail and the level of the portion of said false coin rail which receives false coins passing through said opening is less than the diameter of one of said false coins.

4,465,174

APPARATUS AND METHOD FOR TRANSFERRING ARTICLES TO AND FROM CARRIERS MOVING IN A VERTICAL PATH

Robert J. Ubl, Wayne, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,445
Int. Cl.³ B65G *13/00*
U.S. Cl. 198—361 **24 Claims**



1. Apparatus for transferring an article at a transfer station, comprising:

a mobile article carrier,

means for selectively alternatively moving said carrier upwardly and downwardly in a defined generally vertical path proximate a transfer station,

an article support moving with said carrier for supporting an article engaged therewith, said article support being configured to engage and disengage an unsupported and supported article, respectively, when said article support moves vertically upwardly and vertically downwardly, respectively, relative to said unsupported and supported article, respectively,

a pair of projections extending generally horizontally from opposite sides of said article,

a pair of generally horizontally disposed article transfer members located at said transfer station proximate said vertical path and selectively movable toward and away from each other between an inner transfer orientation in vertical alignment with said pair of projections and an outer bypass orientation disposed outwardly of said projections in vertical misalignment therewith, and

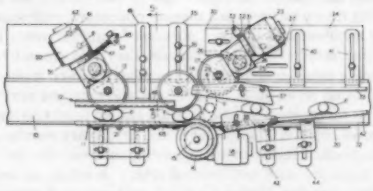
means for alternatively moving said article transfer members between said inner transfer orientation and said outer bypass orientation, said article transfer means when in said inner transfer orientation alternatively (a) underlying said projections to transfer an article engaged on a vertically downwardly moving support to said transfer members, or (b) transferring an article whose projections are supportingly engaged by said transfer members to an underlying vertically upwardly moving article support, said article transfer means when in said outer bypass orientation providing clearance between said article transfer members and the projections of an article to preclude transfer of an article between said article support and said transfer members.

4,465,175

CONTAINER ORIENTING APPARATUS

David L. Caldwell, Lavalette, W. Va., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 30, 1982, Ser. No. 429,930
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—399 **11 Claims**



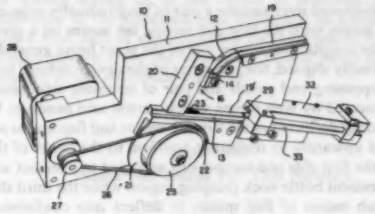
1. Apparatus for orienting flasks having opposed concave and convex panels, comprising a horizontal conveyor for moving flasks in an upright attitude in generally single file, first guide means extending along one side and generally parallel to the edge of said conveyor for guiding the flasks in their movement on the conveyor, a first driven horizontal roller overlying the edge of said conveyor, downstream of said first guide means, for engaging one side of the flask, a second idler roller in generally opposed relationship to said first roller for engaging the opposite side of said flask and advancing the flask on the conveyor in a first direction when the concave side of the flask engages the idler roller and in a second direction when the convex side engages the idler roller, a third driven roller offset downstream of the idler roller and spaced from said first driven roller a distance slightly less than the length of the flask, means rotating said third roller at a surface velocity slower than the surface velocity of said first driven roller, whereby a flask that has its concave side engaged by the idler roller is turned through 180° by simultaneous engagement between said driven rollers.

4,465,176

APPARATUS FOR ORIENTING ARTICLES

Clarence S. Long, Jr., Greensboro, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 12, 1982, Ser. No. 407,369
Int. Cl.³ B65G 47/24
U.S. Cl. 198—400 5 Claims



1. Apparatus for orienting articles having a coding feature at one end comprising first and second tracks arranged to feed articles in end-to-end relation the tracks being inclined one above the other in mutually opposite directions with an exit end of the first track adjacent and spaced from an entry end of the second track to define between them a gateway, a wheel mounted at the entry end of the second track to protrude into the gateway, and means being provided to rotate the wheel in a first rotational direction towards the exit end of the second track, the arrangement being such that, in operation of the apparatus with the first end of an article leading, the wheel will engage the leading end during transition of the article from the exit end of the first track to the entry end of the second track with the trailing end of the article still engaging the exit end of the first track thereby pivoting the article in a second, opposite, rotational direction through the gateway first end leading on to the second track and with a second, opposite, end of the article leading, the wheel will not engage the article permitting the article to pivot freely through the gate in the first rotational direction, first end leading on to the second track.

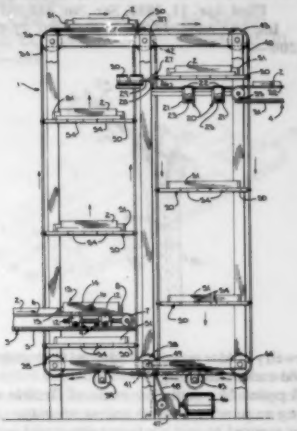
4,465,177

ELEVATOR FOR A CONVEYING SYSTEM

Wolfgang C. Dorner, Oconomowoc, Wis., assignor to Dorner Mfg. Corp., Hartland, Wis.

Filed Feb. 18, 1982, Ser. No. 350,287
Int. Cl.³ B65G 17/16
U.S. Cl. 198—482 4 Claims

1. An elevator for a conveyor system, comprising a first flexible endless member disposed to travel in a first generally rectangular path of travel, a second flexible endless member disposed to travel in a second generally rectangular path of travel, said second path of travel lying in a plane parallel to said first path of travel and offset from said first path of travel, a plurality of carriers adapted to support articles to be conveyed, opposed corner portions of each carrier being pivotally connected to the respective endless members, drive means to drive the endless members in synchronization, whereby said carriers move in a generally rectangular path of travel including an upward vertical run, an upper horizontal run, a downward vertical run and a lower horizontal run, delivery conveyor means having one end intersecting the upward vertical run of said carriers, and discharge conveyor means disposed at a different level than said delivery conveyor means and having an end intersecting the downward vertical run of said carriers, said delivery and discharge conveyor means being disposed in generally parallel offset relation, each carrier being provided with at least one recess to receive the respective delivery conveyor means and discharge conveyor means, each recess extending from one side of the respective carrier past the center thereof to a location in close proximity to the opposite side of said carrier, movement of said carriers in said upward vertical run acting to pick an article from said delivery conveyor means and movement of said article in said downward



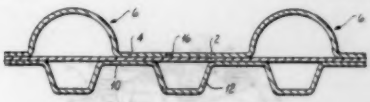
vertical run acting to deposit said article on said discharge conveyor means.

4,465,178

COMPOSITE DRIVE OR CONVEYOR BELT

Robert F. Coggon, London, England, assignor to Molins Limited, London, England

Filed May 23, 1979, Ser. No. 41,554
Claims priority, application United Kingdom, May 24, 1978, 21995/78
Int. Cl.³ B65G 15/42
U.S. Cl. 198—688 3 Claims



1. A conveyor belt for conveying delicate rodlike articles in a direction transverse to their lengths, comprising at least two layers of flexible material which are bonded together, and one of which has a series of integrally-formed rounded projections defining parallel-sided recesses for receiving and conveying a plurality of said articles to be conveyed, said projections being elongated transversely of said belt and extending parallel to the articles to be conveyed and having rounded ends so that the projections have no edges which might damage said articles, said layers of flexible material comprising a first plain layer of flexible material; a second layer of flexible material which is deformed in such a way as to form further projections adapted to engage drive teeth, which second layer is bonded to one surface of the first layer, and a third layer of flexible material which is deformed in such a way as to form said rounded projections to engage articles to be conveyed, which third layer is bonded to the other surface of the first layer.

4,465,179

JEWELRY HOLDER FOR PIERCED EAR EARRINGS

Beverly A. Miller, 33W370 Woodmere, Wayne, Ill. 60184

Filed Apr. 11, 1983, Ser. No. 483,945
Int. Cl.³ A45C 11/00; B65D 5/50, 73/00
U.S. Cl. 206—37 5 Claims

1. A jewelry holder especially adapted for receipt of earrings for pierced ears comprising:

a small pouch-like container made of flexible material and having an interior with an access opening;

a zipper secured to said container about said access opening and operable to expose or completely close off said interior; and

a flexible tab connected to said container on the interior thereof and sized to fix wholly within said container and alternatively extend substantially out of said interior through said access opening when said zipper is opened;

said tab defining means to piercably receive the post of an earring for pierced ears such that the decorative end of the earring is on one side of said tab and the backing of the earring may be applied to the post on the opposite side of the tab to secure the earring to the tab;

whereby the tab, with an earring secured thereto, may be placed within said interior and the zipper closed to assure safekeeping of the earring.

4,465,180

MULTI-PACKAGE AND MULTI-PACKAGING DEVICE

M. Julius Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 29, 1982, Ser. No. 403,172
Int. Cl.³ B65D 85/62
U.S. Cl. 206—158 11 Claims

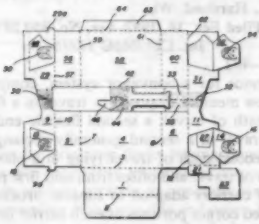
1. A multi-packaging device for bottle-like containers which generally incorporate a body portion, reduced neck portion and shoulder portion interconnecting the neck and body portions, the device comprising a sheet of resilient, deformable plastic material, a plurality of pairs of first slits formed in a central panel region of the sheet, each first slit creating an opposing pair of flap means directly adjacent said first slit on either side thereof, the pairs of first slits extending laterally of the sheet with the slits of each pair being laterally aligned but discontinuous relative to each other and each slit defining an outermost extremity and innermost extremity, each pair of pairs being longitudinally spaced from each other a predetermined distance, a series of second slit means extending generally longitudinal of the sheet and each second slit defining a first tab mean, each outermost extremity of each first slit intersects a second slit means, each first tab means and flap means being designed to pivot upwardly from the plane of the sheet to grip the neck portion of a bottle, a plurality of second tab means formed by third slit means in said sheet, each second tab means positioned intermediate a pair of longitudinally adjacent first tab means with the first and second tab means on a given side of the longitudinal center line of the sheet being generally longitudinally aligned, the perimeter of the device defined by a pair of opposing end panels and pair of opposing side panels interconnected by web means which permit said panels to be downwardly deflected as the first tab means and flap means are deflected upwardly to resiliently conform to the necks of the bottles, the first slits and second slits arranged to intersect and form a resilient bottle neck grasping region while the third slits permit tab means of flap means to deflect into conforming contact with the bottles, the bend line of the first tab means, the third slot means and the bend line of the side panels being generally aligned.

4,465,181

ARTICLE CARRIER

Prentice J. Wood, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jul. 27, 1983, Ser. No. 517,573
Int. Cl.³ B65D 5/46, 5/48
U.S. Cl. 206—188 13 Claims



1. An article carrier having a plurality of cells and comprising a bottom wall, a pair of side walls foldably joined respectively to the side edges of said bottom wall, end wall panels foldably joined respectively to the end edges of said side walls and extending inwardly therefrom, medial panels foldably joined respectively to the medial edges of said end wall panels at each end of the carrier and extending inwardly therefrom, said medial panels having a width greater than the width of a cell, handle structure joined to the upper portions of said medial panels, a full cell width single ply transverse partition panel struck from and foldably joined to each of said medial panels, the transverse partition panels at one end of the carrier and on opposite sides of said handle structure being initially disposed in a coplanar relationship with their associated medial

panels respectively and being adapted to swing through an angle of approximately 90° during setting up of the carrier to positions extending substantially outwardly to the associated side walls and the transverse partition panels at the other end of the carrier and on opposite sides of said handle structure being initially swung out of the planes of their associated medial panels respectively through angles of approximately 180° and being adapted to swing through an angle of approximately 90° during setting up of the carrier to positions extending outwardly to the associated side walls, and an anchoring tab struck from each of said transverse partition panels and joined thereto remote from the associated medial panel and being adhered to the associated side wall.

4,465,182

Patent Not Issued For This Number

4,465,183

TWO-PART LIQUID CONTAINER WITH BREAKABLE PARTITION

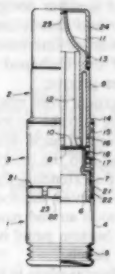
Tadao Saito, and Shigeo Iizuka, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 515,013

Claims priority, application Japan, Jul. 19, 1982, 57-109288[U]; Apr. 27, 1983, 58-63388[U]

Int. Cl.³ B65D *25/08, 1/04*

U.S. Cl. 206—222 **12 Claims**



1. A liquid container:

a first container comprising a substantially enclosed body, a first neck portion with an opening, threads formed on said first neck portion, and a first collapsible or breakable sheet fluidly sealing the opening of said first neck portion to retain liquid within said first container;

a second container comprising a substantially enclosed body, a second neck portion with a first opening, threads formed on said second neck portion, and a second collapsible or breakable sheet fluidly sealing the opening of said second neck portion to retain liquid within said second container;

an intermediate member comprising means for threadably engaging said threaded first neck portion of said first container at one end thereof and threadably engaging said threaded second neck portion of said second container at the other end thereof;

first means for collapsing or breaking said second collapsible or breakable sheet of said second container as said first container threadably engages said intermediate member;

second means for collapsing or breaking said first collapsible or breakable sheet of said first container as said second container threadably engages said intermediate member.

4,465,184

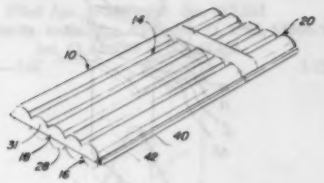
CIGARETTE CASE

Edward G. Bruce, 15555 Huntington Village La., Huntington Beach, Calif. 92647

Filed Aug. 8, 1983, Ser. No. 520,907

Int. Cl.³ A24F *15/20, 15/12;* **B65D** *85/10*

U.S. Cl. 206—261 **8 Claims**



1. A cigarette case, comprising:

a single unified structure having three foldable wall sections;

a first rear-wall section formed having a plurality of contiguous channels formed therein to receive cigarettes individually in each channel;

a second lower front-wall section hingedly connected to rear-wall section and having a plurality of contiguous channels formed therein to match said channels of said rear-wall section;

a third upper front-wall section hingedly connected to said rear-wall section adjacent the upper end thereof, so as to overlap a portion of said lower front-wall section, when said case is positioned in a closed and sealed mode, said upper front-wall section having a plurality of contiguous channels formed therein;

a first hinge means between said rear-wall section and said lower front-wall section;

a second hinge means between said rear-wall section and said upper front-wall section;

a first latching means arranged between said rear-wall section and said lower front-wall section; and

a second latching means arranged between said upper front-wall section and said lower front-wall section.

4,465,185

CIGARETTE CASE WITH DETACHABLE FLAP

Jung S. Sur, 280-21, Shin jang 2-Dong, Song tan City Kyong gi-Do, Rep. of Korea

Filed Aug. 4, 1982, Ser. No. 405,032

Claims priority, application Rep. of Korea, Jan. 6, 1982, 82/52

Int. Cl.³ B65D *85/10, 75/00*

U.S. Cl. 206—264 **2 Claims**

1. A cigarette package, comprising:

a bottom;

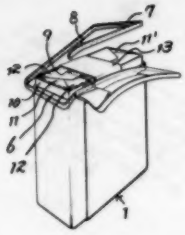
sidewalls extending upwardly from said bottom;

a top comprising:

first and second opposed folded flaps;

a third flap folded over said first and second flaps to at least partially cover said first and second flaps; and

a fourth flap folded over said third flap to at least partially cover said third flap, wherein each of said first, third and fourth flaps being perforated along an unbroken line extending along the fold of said first, third and fourth flaps;



an outer cellophane wrapping; and

a cutting tape having a portion which extends under said cellophane wrapping and an end attached to the underside of said fourth flap, said fourth flap being further perforated above said end of said cutting tape.

4,465,186

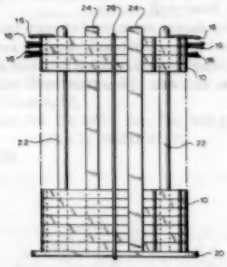
HOLDER FOR CLIPS

Jonathan H. Meyers, 140 Riverside Dr., New York, N.Y. 10024

Filed Jul. 14, 1983, Ser. No. 513,244

Int. Cl.³ B65D *85/24, 85/62;* **A44B** *21/00*

U.S. Cl. 206—342 **24 Claims**



1. A holder for a group of clips of the type having a "U"-shaped body defining an opening, the holder comprising a base having a surface, spaced clip receiving elements extending in substantially parallel relation from points proximate opposite ends of said surface, said clip receiving elements being substantially non-movably mounted to said base and having substantially circular cross-sections, said clip receiving elements being adapted to be received within the openings of the clips such that sets of side-by-side clips may be situated in different planes substantially parallel to said surface, a first clip retaining element extending in substantially parallel relation to said clip receiving elements from said surface intermediate said ends thereof, the clips in each of said sets being receivable adjacent said retaining element such that rotation of the clips relative to said clip receiving elements is substantially prevented and removable means for preventing displacement of the clips relative to said clip receiving elements.

4,465,187

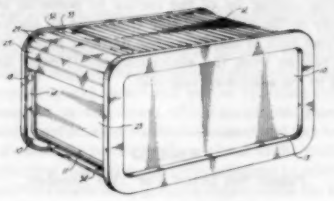
CARD FILE BOX

Winifred Kinard, 3710 Alder La., Pasadena, Calif. 91107, and Roy K. Fujitaki, Altadena, Calif., assignors to Winifred Kinard, Pasadena, Calif.

Filed Feb. 16, 1982, Ser. No. 348,819

Int. Cl.³ B65D *43/20, 81/16, 85/30*

U.S. Cl. 206—425 **5 Claims**



1. A card file box comprising:

a pair of mirror-image generally flat side panels, each side panel being generally rectangular with top, bottom, front and back edges and rounded corners and comprising:

a generally flat central region;

a channel extending around the central region parallel to the edges and corners of the panel;

an inner groove parallel to the channel and extending along at least the front, back and bottom edges of the side panel between the channel and central region;

a plurality of parallel, generally vertical side ribs on the central region of each side panel for subdividing the interior of the box into a plurality of card-supporting compartments;

a generally U-shaped member comprising a bottom panel, and front and rear end panels integral with the bottom panel and having curved interconnections therebetween, the later edges of the U-shaped member being rigidly secured in the inner groove;

a pair of generally vertical front ribs integral with the front end panel extending into the interior of the box;

a pair of generally vertical back ribs integral with the rear end panel extending into the interior of the box;

said front and back ribs extending from such a end panel at least as far as the curved interconnection between the bottom panel and such an end panel to leave a generally flat portion of the bottom panel between the ribs on the front and rear end panels;

a tambour having its lateral edges in the channels for slidable movement between a closed position over the top of the box with the leading edge of the tambour overhanding the top edge of the front end panel and the back edge of the tambour overhanging the top edge of the rear end panel, and an open position with the leading edge of the tambour at about the level of the top edge of the rear end panel and the back edge of the tambour below the bottom panel, said tambour comprising a file card holder formed by a front raised flange extending transversely between the side panels and canted toward the back of the box, and a rear raised flange generally parallel to the first flange and spaced therefrom a distance sufficient for receiving and firmly holding an edge of a file card;

a passage at the bottom edge of each side panel communicating with the channel and having sufficient width for movement of the lateral edges of the tambour through the passage;

a clip removably fitted into each passage and extending into the channel thereby forming a stop for engaging the back edge of the tambour and limiting opening movement of the tambour; and

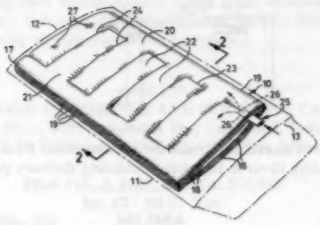
said passages and clips being located for engaging the back edge of the tambour when the leading edge of the tambour is at about the level of the top edge of the rear end panel.

4,465,188

INFLATABLE PACKAGING STRUCTURE

Walter G. Soroka, and Michael P. Galda, both of Mississauga, Canada, assignors to Barbecon Inc., Toronto, Canada

Filed Sep. 16, 1982, Ser. No. 418,687
Claims priority, application Canada, Jul. 2, 1982, 406823
Int. Cl.³ B65D 81/02, 81/14, 30/24
U.S. Cl. 206—522 9 Claims



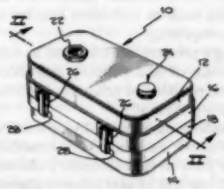
1. An inflatable packaging structure comprising an envelope, and an inner liner disposed within the envelope, the inner liner comprising first and second superposed inflatable layers between which an article to be packaged is adapted to be disposed and each of which comprises two inflatable zones each incorporating a plurality of inflatable cells with the cells of one of the inflatable zones alternating with the cells of the other inflatable zone, a barrier of serpentine configuration separating the two inflatable zones of each inflatable layer and defining said alternating cells of said two inflatable zones, and closable valve means communicating with the zones for admission thereto of pressurized gaseous fluid to inflate the inflatable zones of the first and second inflatable layers.

4,465,189

WATERPROOF CONTAINER

Albert R. Molzan, Alhambra, Calif., assignor to American Safety Flight Systems, Inc., Glendale, Calif.

Filed Apr. 11, 1983, Ser. No. 483,581
Int. Cl.³ B65D 81/18, 51/16
U.S. Cl. 206—524.8 15 Claims



1. A ruggedized self-venting waterproof container adapted for military use over a wide range of environmental conditions, comprising:

an upper waterproof body portion adapted to hold military equipment;

a lower waterproof body portion adapted to hold military equipment;

sealing means for effecting a seal between said body portions;

pressure venting means for providing venting communication between the interior of said container and the environment in which said container is used when there is a differential in the pressure of said environment and the pressure in said interior; and

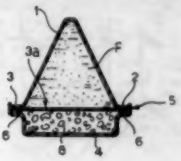
vacuum relief means for eliminating, when open, any vacuum established in said interior, whereby said container may be alternatively subjected to both high altitude and deep submersion without leaking.

4,465,190

PACKAGE FOR FOOD PRODUCTS PARTICULARLY CONFECTIONERY PRODUCTS

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Apr. 5, 1983, Ser. No. 482,063
Claims priority, application Italy, Jul. 21, 1982, 53546/82[U]
Int. Cl.³ B65D 85/72, 81/32
U.S. Cl. 206—526 3 Claims



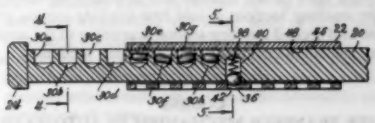
1. A package comprising: a first trough shaped container for receiving a food product, said first container having a free edge and a peripheral flange around said free edge; means for sealing said container comprising a laminar sealing element attached to said flange; and a second trough-shaped container for receiving one or more auxiliary garnishing products for application to the food product at the moment of consumption, said second container having a free edge and shaped parts around said free edge of said second container which cooperate with said flange to snap-engage said shaped parts with said flange, thereby connecting said first and second containers, the laminar sealing element subdividing the internal space of the package into two chamber.

4,465,191

PERSONAL TABLET DISPENSER

Rolf E. Darbo, P.O. Box 2158, Madison, Wis. 53701

Filed Jun. 14, 1982, Ser. No. 388,312
Int. Cl.³ B65D 13/02
U.S. Cl. 206—537 2 Claims



1. A personal hand-held tablet dispenser, comprising:

an elongate core having an end stop at each end thereof and a plurality of tablet cavities axially aligned along one-half of said core;

a sheath enshrouding said core and being responsive to finger pressure for movement between each said end stop, said sheath having a length such that when it abuts one said end stop it covers said plurality of cavities, and when said sheath abuts the other end stop said plurality of cavities are uncovered;

detent means acting between said core and said sheath for releasably latching said sheath to said core after each cavity of said plurality of cavities has been uncovered by said sheath being moved; and

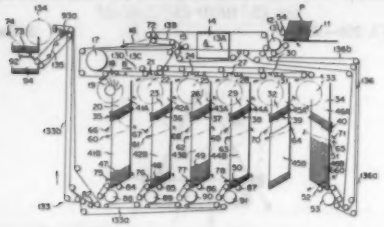
a protruding member above the general surface of the combined core and sheath elements and located in a predetermined location with respect to said plurality of cavities so that the spatial orientation of said dispenser can be readily identified by the feel of said member.

4,465,192

APPARATUS FOR PROCESSING PAPER SHEETS

Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 21, 1982, Ser. No. 400,405
Claims priority, application Japan, Sep. 17, 1981, 56-146591
Int. Cl.[3] B07C 5/38; B65H 31/26
U.S. Cl. 209—534 16 Claims



1. An apparatus for processing paper sheets, having respective first and second surfaces, comprising:

a paper sheet supply section in which paper sheets to be processed are loaded without regard to which direction the first surface or second surface is facing;

a detecting section for checking whether the first or second surface of each paper sheet is facing in a preselected direction and for identifying the kind of each paper sheet;

paper sheet take-out and feed means for taking out paper sheets one by one from said paper sheet supply section and feeding them toward said detecting section;

a first stacking section group including a plurality of first stacking sections, each said first stacking section for collecting like kinds of paper sheets having said first surface facing in the preselected direction;

a second stacking section for collecting all kinds of paper sheets having their respective second surfaces facing the preselected direction;

paper sheet transfer path means extending from said detecting section to said first stacking section group and said second stacking section; and

sorting gate means for selectively leading the paper sheets having been passed through said detecting section to the first stacking sections in said first stacking section group and said second stacking section according to the result of determination effected in said detecting section.

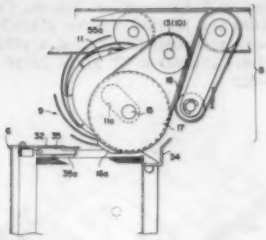
4,465,193

NOTE TRANSFER MECHANISM IN AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

Eiichi Kokubo; Junichi Arikawa; Kowichi Goi, and Shinichi Imura, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,171
Claims priority, application Japan, Aug. 31, 1981, 56-136571
Int. Cl.[3] B07C 5/38
U.S. Cl. 209—534 3 Claims

1. An automatic money depositing and disbursing machine wherein notes inserted into a transacting port are fed into a discriminating section to detect the presence or absence of abnormal notes and receive normal notes and at least portions of the received notes are used as notes to be disbursed, which comprises, a note circulating delivery passage for delivering received notes and notes to be disbursed through a common route, a note transfer mechanism disposed below said note circulating delivery passage and a stacker supporting device disposed below said note transfer mechanism and supporting a plurality of boxes for containing the notes therein, wherein said note transfer mechanism comprises at least one upwardly retractable accumulating wheel for feeding notes into the boxes from the note circulating delivery passage and at least



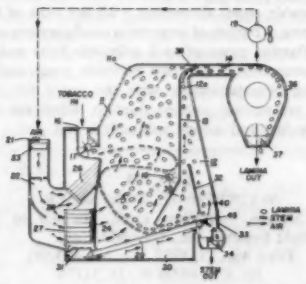
one pair of attracting drums for sucking notes from the boxes and feeding them to the note circulating delivery passage.

4,465,194

THRESHED TOBACCO LEAD SEPARATOR

G. A. John Coleman, Richmond, Va., assignor to Universal Leaf Tobacco Co., Richmond, Va.

Filed Dec. 23, 1982, Ser. No. 452,803
Int. Cl.[3] H07B 4/00
U.S. Cl. 209—639 17 Claims



1. A separator for a tobacco mixture for separating lighter tobacco particles such as leaf from heavier tobacco particles such as stem, comprising:

walls defining a primary chamber and an adjacent secondary chamber, each of said primary and secondary chambers having hood portions of gradually reduced cross sectional area at the top thereof;

means for establishing a generally upwardly air flow in said primary chamber and means for establishing a generally upward air flow in said secondary chamber;

inlet means at one side of said primary chamber for introducing tobacco mixture;

a first paddle type winnower adjacent said inlet means for projecting mixture tangentially across the primary chamber through the generally upward air flow whereby lighter particles are entrained in the rising air and carried upwardly into said hood section of said primary chamber;

a second paddle type winnower positioned at the side of the primary chamber opposite the one side for receiving mixture projected by said first winnower and projecting it tangentially back across the primary chamber through the generally upward air flow whereby additional lighter particles are entrained in the rising air and carried upwardly into said hood section of said primary chamber;

conveyor means positioned in a bottom portion of said primary chamber for receiving heavier particles which have not been air entrained in said primary chamber and carrying them out of said primary chamber, said conveyor

means extending into a bottom portion of said secondary chamber and serving to project particles carried thereon into said secondary chamber, the upward air flow in said secondary chamber serving to provide additional separation by entraining additional lighter particles and carrying them upwards into said hood section of said secondary chamber;

heavy particle collection means in the bottom of said secondary chamber for collecting heavy particles which have not been air entrained in said secondary chamber; and

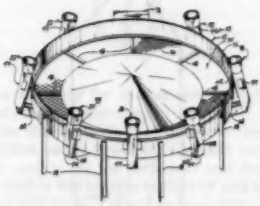
unloading duct means coupled to the hood sections of said primary and secondary chambers at the top thereof for receiving air entrained lighter particles.

4,465,195

METHOD OF SORTING AND COUNTING CANS

Jeffrey J. Buer, 4705 Lakewood Dr., Lakewood, Iowa 50211, and John P. Williams, 6833 Golden La., Des Moines, Iowa 50313

Filed Feb. 4, 1982, Ser. No. 345,802
Int. Cl.³ B07C 7/04
U.S. Cl. 209—704 **1 Claim**



1. A method of sorting and counting a plurality of cans by employing a device including a circular table having a rotatable circular floor with a portion of said floor being of mesh screen whereby liquid drains from said floor, said floor having a center and an outer circumferential edge and being elevated adjacent said center and sloping downwardly therefrom towards said edge, a plurality of counting tubes attached to said table in spaced relation to one another around the circumference thereof, each of said tubes having an open upper inlet end and an open lower discharge end and forming a conduit along the length thereof, said tubes being slightly larger than the diameter of said cans so that said cans can pass longitudinally therethrough, a pair of apertures in each of said tubes intermediate said inlet and discharge ends and being oppositely positioned in registered alignment so that a line through their centers passes approximately through the longitudinal center of said tube, photoelectric cell means mounted on the exterior of each of said tubes and positioned over said apertures so as to project a photoelectric beam along said line therebetween, and counting means connected to said cell means for recording the number of times the continuity of said beam is broken by cans falling through said tubes, said method comprising:

introducing a plurality of cans to said floor of said table,

manually sorting said cans and inserting each sorted can into said inlet end of the appropriately designated tube whereby gravity causes said can to fall through said tube and be discharged from said discharge end thereof,

counting on each tube with the counting means the number of times the continuity of said beam projected across the line between said apertures by said photoelectric cell means is broken by a can falling through said tubes,

displaying the number of cans falling through each of said tubes, said number of cans falling through each of said tubes being equal to the number of times said beam continuity is broken,

displaying the number of cans falling through all of said tubes, said number of cans falling through all of said tubes being equal to the sum of the number of cans falling through each of said tubes, and

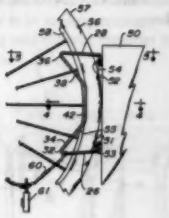
conveying said cans away from said discharge end of said tubes.

4,465,196

BICYCLE RACK

Richard I. Erb, 910 Croton Dr., Alexandria, Va. 22308

Filed Sep. 4, 1981, Ser. No. 299,512
Int. Cl.³ A47F 5/01, 7/04
U.S. Cl. 211—19 **21 Claims**



1. A bicycle rack to be mounted on a rigid support member for receiving and holding one wheel of a bicycle, which wheel has a rim and a tire having sidewalls, said rack comprising:

two substantially identical side members;

two base means for mounting said side members on the support member, so that said side members have an orientation with respect to each other such that they are on opposite sides of a mid-plane of symmetry, and are each spaced laterally from the mid-plane of symmetry;

each of said side members being a wire having opposite ends secured by said base means to the respective ends of the other of said side members;

each of said side members further including two legs respectively extending from corresponding base means and laterally away from said mid-plane to outer ends;

each of said side members further including two angularly extending portions integrally connected as a continuation of respective outer ends of said legs and extending from the outer ends of said legs laterally towards said mid-plane toward a line connecting said base means, and toward each other to inner ends;

each of said side members further having a central portion integrally connecting the inner ends of said angularly extending portions;

the outer ends of each leg being respectively a lateral distance from a corresponding leg outer end of the other side member substantially greater than the sidewall to sidewall dimension of a tire;

the laterally adjacent inner ends of said angularly extending portion being spaced laterally apart from each other a distance less than the lateral distance between the outer ends of said legs and substantially less than the sidewall to sidewall dimension of a tire;

said side members being means for receiving a wheel symmetrically inserted along said mid-plane between said side members to first engage all of said angularly extending portions with tire sidewalls, to thereafter slide a tire inwardly along said angularly extending portions for resiliently laterally spreading apart said central portions as a tire is forced inwardly along the mid-plane in engagement with said angularly extending portions until the widest sidewall to sidewall dimension of a tire passes the inner ends of said angularly portions and said central portions resiliently close laterally toward each other radially inwardly of the widest sidewall to sidewall dimension of a tire and adjacent a rim in the fully seated position of a wheel with the outer periphery of a tire close to a support member; and

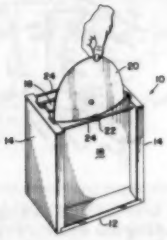
in the fully seated position of a wheel, said inner ends of said angularly extending portions lie completely radially spaced inwardly from and closer together than the sidewall to sidewall greatest width portion of a tire, and said legs engage the greatest width portion of a tire at four points spaced away from said central portions.

4,465,197

PHONOGRAPH RECORD HOLDER

Marc F. Grilliot, 6116 Little Creek Ct., Huber Heights, Ohio 45424

Filed Apr. 20, 1982, Ser. No. 370,165
Int. Cl.³ A47G *29/00*
U.S. Cl. 211—40 **4 Claims**



1. A holder for releasably holding a phonograph record jacket in an upright position with the open end of said jacket at the top, said holder comprising:

(a) a frame having a flat base and two vertical substantially parallel sides forming a U-shaped structure, said frame being adapted for slidably receiving and positioning said jacket in an upright attitude; and,

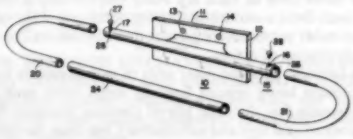
(b) holding means supported by said frame and adapted for releasably holding the open end of said jacket in spread-apart position, said holding means being swing hooks pivotally supported on rods, the ends of which are joined to the vertical sides of said frame.

4,465,198

EXPANDABLE TOWEL RACK

Jack Martin, 434 Rahway Ave., Woodbridge, N.J. 07095

Filed Sep. 16, 1982, Ser. No. 418,704
Int. Cl.³ A47F *5/08*
U.S. Cl. 211—105.3 **4 Claims**



1. An expandable wall rack assembly particularly adapted for accommodating towels, comprising:

(a) A central base member having a rear surface adapted to be positioned on a wall, said base member including a tubular member extending from a front surface and having symmetrical right and left arms extending from opposite sides of said base member,

(b) first and second symmetrical U-shaped side members; each having one arm slideably mounted on a corresponding arm of said tubular member with the inner surfaces of said U-shaped members facing each other,

(c) an outer support member of a tubular configuration moveably positioned between the other arms of said U-shaped side members,

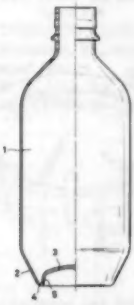
(d) means located on at least one of said arms of said tubular member to secure said arm of said U-shaped member in a desired position.

4,465,199

PRESSURE RESISTING PLASTIC BOTTLE

Katashi Aoki, 6037 Ohazaminamijo, Sakakimachi, Hanishina-gun, Nagano-ken, Japan

Filed Jun. 17, 1982, Ser. No. 389,250
Claims priority, application Japan, Jun. 22, 1981, 56-96226; Sep. 28, 1981, 56-143699[U]; May 31, 1982, 57-80206[U]
Int. Cl.³ B65D *1/02*
U.S. Cl. 215—1 C **3 Claims**

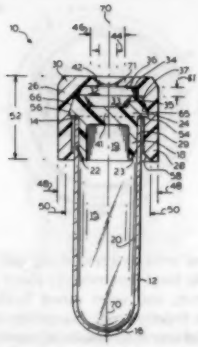


1. A pressure resisting plastic bottle having a neck portion, a body portion and a bottom portion integrally formed of polyethylene terephthalate and comprising a bottom wall portion biaxially molecular-oriented together with a body wall portion, an inwardly inclined outer peripheral wall portion at the bottom of said body wall portion, an inner peripheral wall portion turned back from the lower end of said outer peripheral wall portion toward the inside and a bottom wall central portion in the form of a convex curved surface formed continuous to the upper portion of the inner peripheral wall portion, said outer peripheral wall portion being disposed with respect to the vertical at an angle within the range of 6 to 30 degrees, said inner peripheral wall portion being disposed with respect to the vertical at an angle within the range of 5 to 7 degrees, and the diameter d of an annular portion of said bottle in contact with ground and connecting the lower ends of inner and outer peripheral wall portions and the maximum diameter D of the bottle body portion are related by d/D being in the range of 0.55 to 0.80, the improvement wherein said annular portion in contact with ground includes a curved outer corner extending to the outer peripheral wall portion and a curved inner corner extending to the inner peripheral wall portion, a curved additional corner at the juncture between the inner peripheral wall portion and the bottom wall central portion, the outer corner and the additional corner each having a greater radius of curvature than the inner corner, the wall thickness t_2 of the inner peripheral wall portion being greater than the wall thickness t_1 of the outer peripheral wall portion and the wall thickness t_3 of the bottom wall central portion being greater than the wall thickness t_2, and the weight of the bottom portion internally of the annular portion in contact with ground being in the range of about 14.5% to 16.0% of the weight of the bottle.

4,465,200
LOW CONTAMINATION CLOSURE FOR BLOOD COLLECTION TUBES

Edward P. Percarpio, N. Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jun. 6, 1983, Ser. No. 501,744
Int. Cl.³ B65D *47/36*
U.S. Cl. 215—247 **5 Claims**



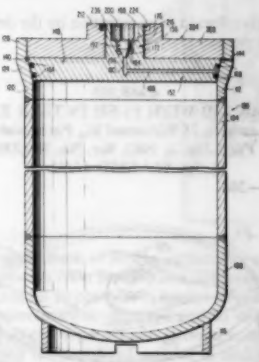
1. A closure assembly for evacuatable tubes for receiving samples of body fluids comprising:
(a) an annular stopper body with an upper integral annular flange portion, and a lower annular skirt portion;
(b) an upper well in the top surface of said stopper body;
(c) a lower well in the bottom surface of said stopper body, said lower well being defined by said skirt portion;
(d) said upper and lower wells being coaxial with the axis of said stopper body to define a needle receiving diaphragm wall therein;
the improvement characterized by
(e) a flexible cap body for mounting on said annular stopper body,
(f) said cap body having an open end and a closed end;
(g) said open end having a well therein for receiving said stopper body;
(h) said closed end having a needle receiving bore in the top surface thereof;
(i) cooperating opposed annular abutment means on said stopper body and said cap body for maintaining said cap body on said stopper body; and
(j) said closed end of said cap body being spaced from the opposed top surface of said stopper body to define a sample containing chamber therein.

4,465,201
CONICAL O-RING SEAL

Gordon G. Chalfant, Jr., North Augusta, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1983, Ser. No. 462,155
Int. Cl.³ B65D *53/02*
U.S. Cl. 220—3 **6 Claims**

1. A vessel for containing hazardous material, comprising:
a body having a chamber therein;
a closure member adapted to seal said chamber;
said chamber being open and having a rim adapted to receive said closure member in sealing engagement therewith;
said closure member having a frustro-conical periphery, and said rim having a frustro-conical interior adapted to mate with said periphery of said closure member;
said periphery of said closure member having a first circumferential endless groove and a second circumferential endless groove therein; said first circumferential endless groove and said second groove each being adapted to receive an O-ring;
said closure member having a first test port communicating with an opening in said periphery of said closure member between said grooves and with an exterior portion of said closure member;
a plug adapted to seal said first test port;
an O-ring received in said first circumferential endless groove;
an O-ring received in said second circumferential endless groove;
said first circumferential endless groove being nearer said chamber than said second circumferential endless groove while said closure is in sealing engagement;
a means for retaining said closure member in sealing engagement with said rim;



said rim having an internal circumferential groove therein adjacent said closure member while in sealing engagement; said internal circumferential groove being further from said chamber than said second circumferential endless groove, and being adapted to receive leakage passing said second circumferential endless groove; and
a second test port including a passageway in said rim in communication with said internal circumferential groove;
whereby sealing of said chamber by said closure member can be tested by detecting leakage from said chamber, when pressurized, past said first circumferential endless groove at said first test port, and by detecting leakage past said second circumferential endless groove at said second test port.

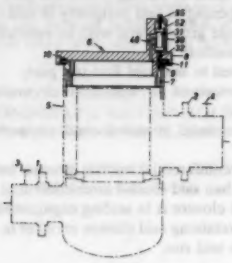
4,465,202
FLUID CONTAINER WITH VENTING MEANS

Derek Stoves, and John E. Hatley, both of Newcastle, England, assignors to British Gas Corporation, London, England

Filed Sep. 23, 1982, Ser. No. 422,031
Claims priority, application United Kingdom, Sep. 23, 1981, 8129234
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—203 **8 Claims**

1. A fluid container comprising a vessel, removable closure member and mechanical linkage means for mechanically linking the closure member to the vessel to provide a closure for, said mechanical linkage means comprising a bayonet fixing means for providing the mechanical linkage between the vessel and the closure member and including at least one lug cooperating with a corresponding slot and at least one valve means, operable to enable the interior of the container to be closed or open to atmosphere while the closure member is mechanically linked to the vessel, for providing a detent for releasably retaining the at least one lug in the slot when the container is

closed to atmosphere in such a manner that the closure member is incapable of being removed from the vessel until the at least one lug is released from retention by the detent provided by the valve means.

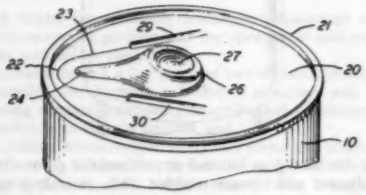


4,465,203

CAN LID WITH PUSH IN TEAR TAB

Michael P. Lambert, 21 Richmond St., Portsmouth, N.H. 03801

Filed Jun. 2, 1983, Ser. No. 500,335
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—268 **5 Claims**



1. A one piece can lid with an embossed and scored push-in tear tab therein,

a. one end of said tear tab being scored around that end to tear upon the application of downward pressure thereon, the score line extending around said tear tab rearwardly on either side thereof to a hinge line;

b. a centrally disposed upwardly embossed beak in said tear tab, the pointed end of which ends at said score line defining said one end and the wider rearward portion of said beak extending to said hinge line, and

c. an embossed digit receiving area in said lid and on the other side of and contiguous said hinge line and flowing into and being a part of the embossment forming said beak,

said tear tab being adapted to tear and rotate downwardly under a rotating pressure from said beak via a pushing pressure being applied by a digit to said digit receiving area, with said embossment buckling proximate said hinge line.

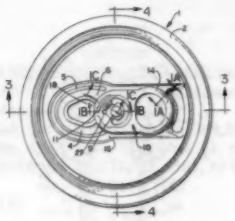
4,465,204

PULL TAB FOR EASY OPEN END

Elton G. Kaminski, Sidney, and Carl F. McEldowney, Russia, both of Ohio, assignors to The Stolle Corporation, Sidney, Ohio

Filed Jul. 13, 1983, Ser. No. 513,447
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **7 Claims**

1. In an easy open can end having a score line defining a tear strip, said score line being generally U-shaped with the open end of the U towards the center of said can end, said open end being interrupted so that said tear strip will be captively retained on the underside of said can end when torn open, an integral rivet adjacent the open end of the U outside said score line, and a pull tab secured to said can end by means of said rivet, said pull tab having a nose portion to initiate a tear along said score line upon lifting of said pull tab, the edges of said nose portion being curled into a continuous cylindrical cross-sectional shape to provide a high beam strength and to rigidize said nose portion and to prevent failure by bending before said tear strip is opened, whereby said pull tab, when raised, the nose portion thereof initiates a tear along said score line, causing said tear strip to bend downwardly along a transverse line in front of said rivet, and when raised further, causing said score line to tear therearound, except for said interrupted portion thereof, said tear strip thus being captively retained on the underside of said can end, and when said tear strip is fully opened, to be retracted so as to lie substantially flush against the surface of said can end.

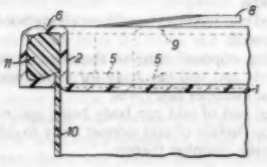


4,465,205

FRAGILE OPENING MEANS FOR A CONTAINER LID

Brian L. C. Sutch, 49 The Island, Thames Ditton, Surrey, England

Continuation-in-part of Ser. No. 440,175, Nov. 8, 1982, abandoned. This application Nov. 17, 1983, Ser. No. 552,853
Claims priority, application United Kingdom, Nov. 16, 1981, 8134493
Int. Cl.³ B65D *17/40*
U.S. Cl. 220—276 **10 Claims**



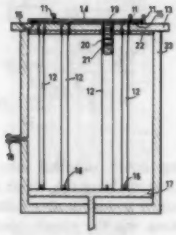
1. A retainer for retaining a closure and a container in closed condition, the retainer comprising a main flange which hingedly carries extension flange means which in turn carry retaining means, said extension flange means and retaining means having a predetermined attitude relative to one another, the retainer, in an initial condition before the closure is applied to the container, having the extension flange means and retaining means in a first position relative to the main flange where they are clear of the path of relative movement of the closure and container in application of the closure to the container, the extension flange means and retaining means, whilst remaining in their predetermined attitude relative to one another, being displaceable after application of the closure to the container, relative to the main flange to position the retaining means in the path of the relative movement of the closure and the container in a direction of removal of the closure from the container, and a zone of weakening in the retainer where a rupture can be effected to separate the extension flange from the container to allow separation of the closure and container.

4,465,206

DEVICE FOR THE SIMULTANEOUS MOUNTING OF COMPONENTS ON A CARRIER

Alain Sorel, Les Baux Ste Croix, and Michel Bury, Evreux, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 226,261, Jan. 19, 1981, abandoned. This application May 17, 1983, Ser. No. 494,688
Claims priority, application France, Jan. 21, 1980, 80 01216
Int. Cl.³ B65H *3/44*
U.S. Cl. 221—94 **2 Claims**



1. A device for placing a plurality of components against a carrier in a given configuration, comprising

a plurality of tubular magazines formed with thin walls and adapted to contain respective stacks of components, each magazine having an open top end, an opening adjacent the other end, and transverse sections corresponding to the cross-section shape of the components to be contained therein,

a follower member disposed in each magazine arranged to have a friction fit with respect to walls of the magazine,

an element having an upper surface and a lower surface and holes extending from said upper to said lower surfaces, said plurality of magazines being disposed in said holes substantially parallel to each other, with their top ends arranged in said given configuration adjacent said upper surface,

a fluid-tight housing arranged so that said element forms a housing cover, said element being a plate having holes arranged in said given configuration, said magazines passing through said holes with top ends of said magazines being adjacent said holes; said housing and cover enclosing a space, said openings adjacent the other end of each magazine communicating with said space; and said plate further including means for positioning a carrier in aligned relationship with and adjacent said open top ends,

means for admitting a fluid under pressure into said space below said follower members, for pressing the top component of each stack against a carrier which has been positioned adjacent said open ends, and

a platform arranged within said fluid-tight housing for sliding movement arranged such that by sliding the platform the magazines may be extracted through the plate.

4,465,207

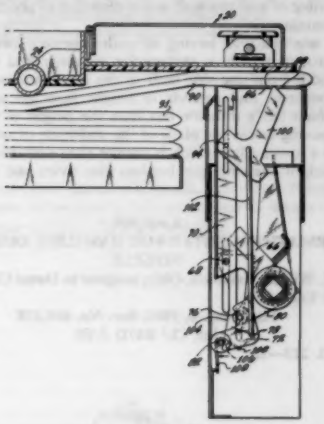
SINGLE ARTICLE VENDING MACHINE

Jack S. Chalabian, Huntington Beach, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Continuation of Ser. No. 67,781, Aug. 20, 1979, abandoned. This application Aug. 6, 1981, Ser. No. 290,512
Int. Cl.³ G07F *11/14*
U.S. Cl. 221—241 **5 Claims**

1. In a single-article vending machine of the type in which a stack of articles to be vended is stacked on an upwardly-biased platform vertically movable on a rod, which platform urges the articles upwardly against a generally planar face of a cover and in which the uppermost article nearest the cover is removable from the stack in a direction parallel to the cover following the depositing of a predetermined combination of coins into the vending machine and the opening of an access door in the vending machine, the improvement comprising:

an angled catch mounted to the underside of said vertically movable platform for simultaneous clockwise rotation and horizontal sliding movement away from said rod to engage said rod and lock said platform against downward movement, thereby to prevent users of the machine from



depressing the stack of articles sufficiently to remove an article sideways from beneath said cover; and

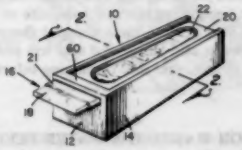
means enabled by an operator operative to pivot said catch in a counterclockwise direction and to slide said catch towards said rod to permit said platform to be lowered for replenishing the supply of articles in said vending machine.

4,465,208

CHEWING GUM DISPENSER

Ray M. Buban, and Deborah L. Buban, both of 1159 13th St., Los Osos, Calif. 93402

Continuation of Ser. No. 153,167, May 27, 1980, abandoned. This application Nov. 29, 1982, Ser. No. 445,361
Int. Cl.³ B65D *83/08*
U.S. Cl. 221—279 **1 Claim**



1. A dispenser for dispensing sticks of chewing gum, which sticks have a given thickness, one at a time, comprising, in combination:

a container having a bottom wall, two side walls, two end walls, and a top wall, and having size to receive a plurality of sticks of chewing gum arranged contigiously in a stack such that the sticks lie substantially parallel to one another and to said top and bottom walls of said container;

a plate disposed within said container substantially parallel with said top and bottom walls;

means in the form of a resilient element for urging said plate and any stack of gum sticks disposed thereon toward the underside of said top wall;

the top wall being formed by a first portion and second portion; said second portion of said top wall being adjacent to one end wall and extending from one of said two side walls to the other; said first portion is retractable in the plane of said top wall in the direction away from said second portion;

said first portion of said top wall having an opening formed therethrough which opening is elongated along the centerline of said top wall in the direction of the ends of said containers;

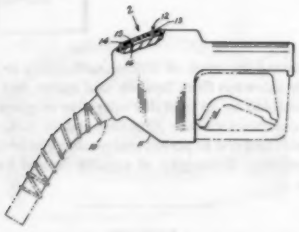
said one end wall having an outlet opening formed therethrough which is rectangular in shape and extends in width from one side wall to the other side wall of said container, and extends in height from an upper edge which lies a distance less than the height of said outlet opening below the plane of the underside of said top wall to a lower edge which is greater than said thickness of a stick of chewing gum but less than twice said thickness.

4,465,209

INFORMATION CENTER FOR GASOLINE DISPENSING NOZZLE

Paul R. Wilder, Hamilton, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,138
Int. Cl.³ B67D *5/00*
U.S. Cl. 222—23 **12 Claims**



1. An information center, said center comprising:

a fluid dispensing nozzle, said nozzle having a top portion;

a disc, said disc having a main body portion, said disc having a bottom most integral flange, said flange being larger in diameter than said main body portion, said main body portion having a top most display surface;

an elastometric jacket, said jacket having inner and outer surfaces, said means being sized to fit said fluid dispensing nozzle, said jacket having an aperture formed therein, said aperture being approximately the size of said main body portion, said bottom most integral flange retaining said disc between said jacket and said top portion of said dispensing nozzle, said disc displaying information indicia.

4,465,210

CIRCUIT FOR WASHING A WATER-FEEDING SYSTEM IN AUTOMATIC BEVERAGE VENDING MACHINES

Masao Iwanami, Suzuka, Japan, assignor to Fuji Electric Co., Ltd., Japan

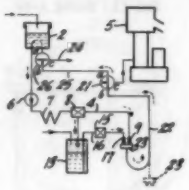
Filed Jun. 10, 1981, Ser. No. 272,216
Claims priority, application Japan, Jun. 24, 1980, 55-88584[U]; Sep. 18, 1980, 55-132694[U]
Int. Cl.³ B67D *1/08*
U.S. Cl. 222—148 **7 Claims**

1. In an automatic beverage vending machine having a water-feeding system comprising a water-feeding conduit, a water-feeding pump, a water-feeding valve, a carbonator connected to the water-feeding valve, a water nozzle connected to the water feeding valve and directed to supply water from a water reservoir to a cup on a vending stage, and a carbonated water nozzle connected to the carbonator and directed to supply carbonated water to a cup on the vending stage, a circuit for washing the water-feeding system, comprising:

a return conduit,

a switching cock connected to one end of the return conduit and to the upstream side of the water-feeding pump;

the other end of the return conduit adapted to be detachably connected to said water nozzle and said carbonated water nozzle;



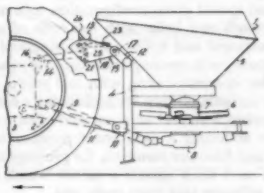
whereby washing liquid supplied into the water-feeding conduit is recovered from the water nozzle or the caronated water nozzle and is forcibly refluxed into the intake side of the pump via the return conduit and switching cock, to provide continuous circulation of washing fluid through the entire water-feeding system to thereby facilitate cleaning of the water-feeding conduit, the water-feeding pump, the water-feeding valve, the carbonated water nozzle and the water nozzle.

4,465,211

WEIGHT INDICATOR FOR MATERIAL CONTAINER OF AGRICULTURAL DISTRIBUTING DEVICE

Ary van der Lely, Maasland, and Cornelis J. G. Rom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed May 3, 1978, Ser. No. 902,414
Claims priority, application Netherlands, May 9, 1977, 7705057
Int. Cl.³ B67D *5/06, 5/64*
U.S. Cl. 222—166 **8 Claims**



1. Agricultural equipment for distributing material such as seed or fertilizer, the equipment comprising an upright supporting frame member means including a lower arm and a supporting arm pivotably connected thereto for coupling the equipment to the lifting device of a tractor or like vehicle, a container for material to be distributed which is supported at least in part by said frame member and said lower arm, a discharge member for receiving said material from said container, and an apparatus continuously providing data related to the quantity of material delivered from said container to said discharge member, said apparatus being arranged in said supporting arm connecting the equipment to said tractor or like vehicle and comprising a pivotable connection between said frame member and said supporting arm, resilient means interconnecting said frame member and said supporting arm, and indicia means which in part is interconnected to said frame member and in part to said supporting arm, the coaction of said parts providing said data at least in part.

4,465,212

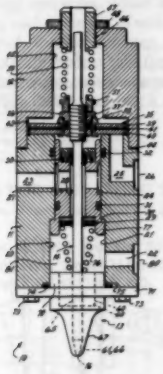
LIQUID DISPENSING DEVICE

Jacob J. Boone, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Continuation of Ser. No. 148,577, May 9, 1980, abandoned. This application Jul. 21, 1982, Ser. No. 400,373

Int. Cl.³ B65D 5/72

U.S. Cl. 222—504 8 Claims



1. A device for dispensing viscous liquids comprising

a nozzle having an axial bore therein, said bore having a frustoconical valve seat formed therein, said frustoconical valve seat terminating at a nozzle outlet orifice,

an axially movable needle valve having a generally conically shaped section on the distal end thereof,

said conically shaped distal end section of said needle valve being engageable with said frustoconical valve seat to close said valve,

a bushing located within said nozzle, said bushing having a needle valve guide surface formed therein, said needle valve guide surface being engageable with said needle valve at a location spaced from said valve seat so as to guide movement of said needle valve along a longitudinal axis concentric to said valve seat,

passageway means for supplying liquid to said nozzle bore forwardly of said bushing, and

means for minimizing stringing of the viscous liquids from the nozzle orifice after closing of the needle valve on the valve seat, said means including a tip on said nozzle having an exterior surface which tapers inwardly toward said nozzle orifice, said tip terminating in a semi-spherical end surface, and said nozzle orifice being located in said semi-spherical end surface so that there is no cavity between the distal end of said needle valve and said nozzle orifice.

4,465,213

PLEATING MACHINE

Clemens M. Lehmann; Erwin E. Feiten, and Erich E. zur Nieden, all of Berlin, Fed. Rep. of Germany, assignors to Karl Rabofsky GmbH, Berlin, Fed. Rep. of Germany

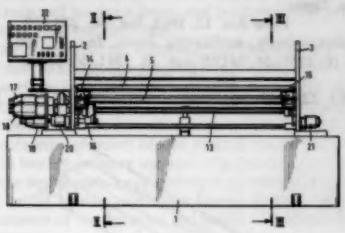
Filed Dec. 16, 1982, Ser. No. 450,290

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3151237; Dec. 22, 1981, 3151239; Dec. 22, 1981, 3151240

Int. Cl.³ A41H 43/00

U.S. Cl. 223—30 25 Claims

1. A pleating machine having intermittently driven pleating rolls, between which a pleatable fabric can be introduced with the aid of pleating blades which are disposed on an upper and a lower blade beam and work in the manner of feed tongs, while tipping devices are associated with the blade beams mounted pivotably on the ends of arms on a blade shaft adapted to swivel variable distances to-and-fro, wherein for driving the pleating rolls (4, 5), for driving the blade shaft (13), for driving the tipping device (15) for the upper blade beam (10), and for driving the tipping device (14) for the lower blade



beam (11), individual drives (17, 18, 20, 21), whose functions are controllable independently of one another by means of an electronic control device (22), are provided.

4,465,214

APPARATUS FOR GUIDING THE FOLDING BLADE AND FOR ACTUATING THE TILTING ARM OF THE BLADE BAR OF A PLEATING MACHINE

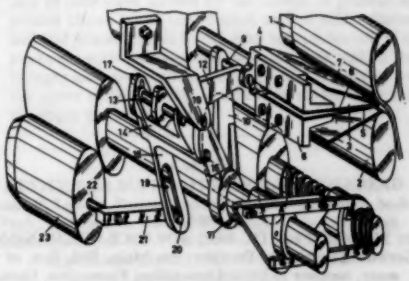
Erwin E. Feiten, and Clemens M. Lehmann, both of Berlin, Fed. Rep. of Germany, assignors to Karl Rabofsky GmbH, Berlin, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,293

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1981, 3151238

Int. Cl.³ A41H 43/00

U.S. Cl. 223—30 11 Claims



1. Apparatus for guiding the folding blade and for actuating the tilting arm of a blade bar mounted pivotably on jibs of a blade shaft and belonging to a pleating machine, wherein the apparatus has an individual drive (23) for a pivoting member (21;28) to pivot at least one rocker (16;41) to and fro between two end positions, wherein mounted pivotably on the rocker (16; 41) is an intermediate member (14; 42) on which the tilting arm (12; 24) is articulated at a distance from its point of articulation (15) on the rocker (16; 41), the geometry of the articulated chain formed by the pivoting member (21; 28), the rocker (16; 41), the intermediate member (14; 42), the tilting arm (12; 24) and the jib (10) being selected so that the tip of the folding blade (3, 5) is guided along on the upper or lower contact plate (7, 8) of the pleating machine as a function of the position of the pivoting member (21; 28).

4,465,215

CUTTING EDGE FOR DISPENSING CONTAINER

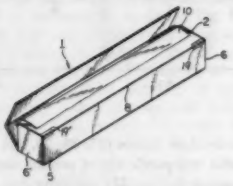
Hisao Kai, Chiba, Japan, assignor to Asahi-Dow Limited, Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 339,010

Claims priority, application Japan, Jan. 27, 1981, 56/9649; Mar. 10, 1981, 56/33193; Apr. 28, 1981, 56/63339

Int. Cl.³ B65D *85/671*

U.S. Cl. 225—48 **10 Claims**



1. A dispenser for sheet materials, said dispenser containing a rolled sheet material selected from the group consisting of synthetic resin film, metallic foil, thin paper of short fibers or a laminate thereof and formed in the shape of a rectangular parallelepiped to be openable at least at the time of use, said sheet material contained in the dispenser being available to pull out in a direction perpendicular to one of the longitudinal corners of the dispenser, a coarse file-like face as the cutting means being formed of an aggregate of grindstone particles adhered fast to the front face of a substrate which has its rear face applied with an adhesive agent and covered with a release paper, said cutting means being contained within the dispenser, and a mark for application of said cutting means being indicated on a position overlying across the longitudinal corner of two walls which contacts with at least the starting point of a cut of the sheet material pulled out of the dispenser.

4,465,216

THERMOPLASTIC ROD ADVANCE MECHANISM

Gerhard Lauckhardt, Frankfurt am Main, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

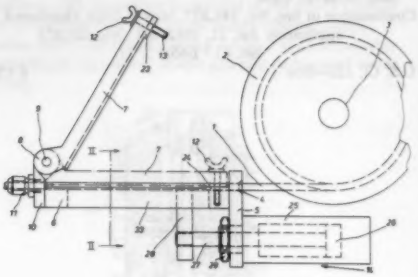
Filed Sep. 28, 1982, Ser. No. 425,945

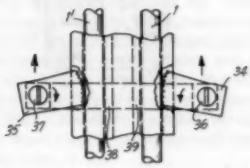
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 8128501[U]

Int. Cl.³ B65H *51/18*

U.S. Cl. 226—158 **4 Claims**

1. A common mechanism for simultaneously advancing a pair of rigid rods of thermoplastic adhesive comprising a guide which receives the rods and is provided with opposed slits, a jaw projecting through each slit for pressing against the rods, said jaws being mounted for movement along the guide and, during their advancing movement, moving the rods therewith, wherein the guide consists of a pair of separable plates (6, 7) which are provided each with opposed grooves (15, 16; 17, 18) which receive the rods, 1'(1), when the plates (6,7) are brought together a releaseable clamping device for holding the plates together (12, 13), the walls of the slits (19, 20; 21, 22) being formed by the inside surfaces of the plates (6,7) in such a manner that, when the plates (6, 7) are separated from one another,





the guide formed by the grooves (15, 16; 17, 18) and the slits (19, 20; 21, 22) are opened.

4,465,217

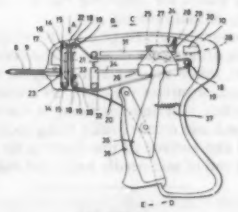
FASTENER FEEDING METHOD AND MECHANISM

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Apr. 1, 1982, Ser. No. 364,571

Int. Cl.³ A41H *37/00*

U.S. Cl. 227—67 **8 Claims**



1. A device for dispensing sequentially a plurality of fasteners one at a time for each operation of the device, each said fastener including a filament having a head at one end thereof and an anchor bar at the other end thereof, said fasteners being coupled in sequence to a guide bar to form an integral fastener assembly, comprising a body having a front end which supports a hollow slitted needle, an operation lever pivotably coupled to said main body, a driver operatively coupled to said operation lever and adapted to push a fastener in alignment with said needle in a fastener-severing position through said needle, a pair of spaced endless belts supported on said main body which hold said guide bar therebetween, and advancing means operatively coupled to said operation lever for moving at least one of said endless belts to feed the next successive fastener to said fastener-severing position upon operation of said operation lever.

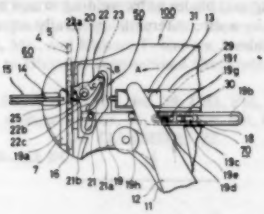
2. A method for feeding sequential fasteners in a fastener assembly to a fastener-severing position in a fastener dispensing device, each said fastener including a filament having a head at one end thereof and an anchor bar formed at the other end thereof to extend essentially perpendicular to a connecting member connecting said fasteners to a guide bar to form said fastener assembly, said fasteners being individually successively dispensed by the dispensing device one at a time during each fastener dispensing operation, which method comprises the steps of positioning said guide bar of said fastener assembly in a fastener guide path formed between a pair of spaced, endless belts and selectively feeding said fastener assembly by means of said guide bar along said guide path by moving at least one of said endless belts upon each operation of said device.

4,465,218

APPARATUS FOR ATTACHING TAG PINS

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1982, Ser. No. 365,357
Claims priority, application Japan, Apr. 21, 1981, 56-59224
Int. Cl.³ A41H *37/00*
U.S. Cl. 227—67 **6 Claims**



1. A tag attaching apparatus comprising a body having a hollow needle mounted at a front end portion thereof, a guide groove therein for receiving tag-pins of a tag-pin assembly one at a time, the guide groove being formed in the body in the vicinity of and in communication with a base end of the hollow needle; means for feeding said tag-pins disposed in the vicinity of the guide groove for advancing tag-pins of a loaded tag-pin assembly, one at a time, to a position adjacent to the base end of the hollow needle, and a backtracking prevention means including a stopper claw disposed also in the vicinity of the guide groove, said feeding means and said backtracking prevention means being disposed parallel to each other, said feeding means including an engagement claw rockably supported thereon, said engagement claw being rockable from a position on one side of said stopper claw to a position beyond said stopper claw in the direction in which the tag-pins are advanced during feeding.

4,465,219

SOLDERING APPARATUS

Kenshi Kondo, Tokyo, Japan, assignor to Nihon Den-Netsu Keiki Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,390
Claims priority, application Japan, Jun. 2, 1981, 56-83825
Int. Cl.³ B23K *1/08*; H05K *3/34*
U.S. Cl. 228—37 **5 Claims**

1. An apparatus for soldering printed circuit boards moving along a predetermined path of travel, said apparatus comprising:

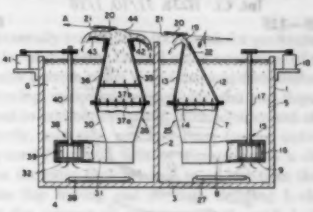
a first open-topped tank for containing a first quantity of molten solder;

a second open-topped tank located adjacent to and downstream of said first tank along said path of travel of said printed circuit boards for containing a second quantity of molten solder;

an upwardly extending nozzle member disposed within said first tank and having a lower end portion in flow communication with said first tank;

feed means operable for supplying the molten solder in said first tank to said nozzle member to cause the molten solder to overflow from the upper tip end of said nozzle member;

said nozzle member being configured to form a wave of overflowing solder extending from an upper outlet only in the direction of travel of said printed circuit boards, said outlet having an inner toothed edge portion for roughening the upper surfaces of said wave of overflowing solder, said outlet having adjustable means to provide for the adjustment of the direction and height of said overflowing solder wave;



an upwardly extending riser disposed within said second tank and having a lower end portion in flow communication with said second tank; and

second feed means operable for supplying the molten solder in said second tank to said riser to cause the molten solder to overflow from the upper end of said riser, said upper end of said riser being so arranged to form an overflowing solder layer flowing in directions the same as and opposite to the direction of the travel of said printed circuit boards,

whereby the lower surface of each printed circuit board is first brought into co-current contact with the upper surface of said wave formed by said nozzle to preheat said printed circuit board and to apply molten solder thereto, and said printed circuit board, after being subjected to the treatment with molten solder from said first tank, is then brought into co-current and counter-current contact with the upper surface of said overflowing solder layer from the upper end of said riser.

4,465,220

DEVICE FOR SUPPORTING WELD UNDERBEAD

Jimmie E. Ledlow, Renton, and Paul M. Stoops, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 91,025, Nov. 5, 1979, abandoned. This application Apr. 25, 1983, Ser. No. 479,430
Int. Cl.³ B23K *5/22*
U.S. Cl. 228—50 **3 Claims**

1. A device for controlling weld underbead height of aluminum tubular members comprising: a solid elastomeric mandrel with an axially located opening therethrough and the mandrel having a smaller diameter near each end than in the middle, a textile sleeve of ceramic fiber around the periphery of the mandrel, a textile sleeve of fiberglass fibers around the ceramic sleeve, a Bowden wire having one end of a spiral wire casing attached to one end of the elastomeric mandrel and the other

end extending outside tubing to be welded and the wire attached at one end to a second end of the mandrel and the other end of the wire extending through and past the means outside the tubing for pulling on a spring steel wire to effect an axial compression to form a mold to control the underbead height of the weld.

4,465,221

METHOD OF SUSTAINING METALLIC GOLF CLUB HEAD SOLE PLATE PROFILE BY CONFINED BRAZING OR WELDING

Glenn H. Schmidt, 1857 Los Encinos, Glendale, Calif. 91208

Filed Sep. 28, 1982, Ser. No. 425,723
Int. Cl.³ B23K *31/10, 1/18*
U.S. Cl. 228—125 **8 Claims**

1. In the method of sustaining a metallic golf club head sole profile, the head having a bottom wall defining an opening with a peripheral and undercut ledge extending about said opening to support a sole plate received into said opening and on the ledge surface, the head defining a hollow shell, the steps that include

(a) providing a dam on and integral with the head bottom wall and of the same metal as said wall extending about said opening and to project outwardly to substantially greater extent than the sole plate when the sole plate is supported on said ledge surface,

(b) joining the sole plate to the head by producing a metallic melt in a peripheral space extending at and about the sole plate periphery with the melt in contact with the ledge surface and to a melt thickness at least as thick as the sole plate, and employing the dam to confine the melt at the side of the dam proximate the sole plate, and

(c) thereafter removing the dam by abrading same to the common level of outer surfaces defined by the sole plate and head wall.

4,465,222

METHOD OF MAKING A DRILL STRING STABILIZER

John W. Hester, 1700 Savanne Rd., Houma, La. 70360

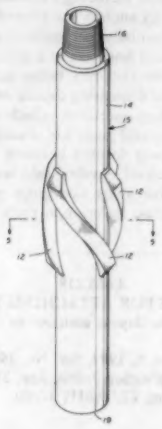
Filed Oct. 12, 1982, Ser. No. 433,637
Int. Cl.³ B23K *31/00*
U.S. Cl. 228—170 **3 Claims**

1. In a method of making a drill string stabilizer, the steps comprising:

providing a length of drill string as the body of said stabilizer;

providing a cylindrical section of a tubing having an inside diameter matching the outside diameter of said stabilizer body;

cutting a plurality of helical and elongated sections from said cylindrical section of said tubing to form a plurality of helical blades;



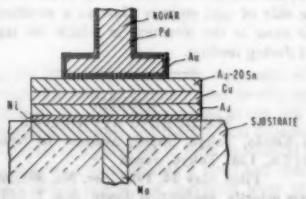
and attaching said blades as by welding to said body of said stabilizer in a circumferential generally equally spaced row thereabout.

4,465,223

PROCESS FOR BRAZING

Armando S. Cammarano, Hyde Park, and Giulio DiGiacomo, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 221,603, Dec. 31, 1980, abandoned.
This application Jul. 15, 1983, Ser. No. 514,137
Int. Cl.³ B23K *1/04*
U.S. Cl. 228—198 **3 Claims**



1. A brazing process in which two structures are joined together with a gold-rich 80/20 Au/Sn brazing solder, characterized by the additional steps of:

providing a film of the brazing solder on a surface of at least one structure to be brazed, providing a film of copper in contact with said brazing solder, and heating the structures to approximately 280° C. to thereby form a braze joint including a ternary Au/Sn/Cu alloy.

4,465,224

METHOD OF REDUCING MICROFISSURING IN WELDS HAVING AN AUSTENITIC STAINLESS STEEL ALLOY BASE METAL

Basil J. Nicolozakes, Addison, Ill.; John M. Sanders, Waterford, Conn.; Daniel P. Chiangi, and Chris M. Pacula, both of Norwich, Conn., assignors to UNC Navel Products, Naval Products Div., Uncasville, Conn.

Filed Apr. 26, 1982, Ser. No. 371,603
Int. Cl.³ B23K 35/38
U.S. Cl. 228—222 8 Claims

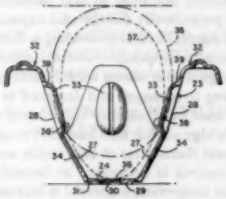
8. A method of reducing microfissuring in welds utilizing a base metal consisting essentially of an austenitic stainless steel alloy and a filler metal comprising the step of precooling the base metal to a temperature in the range of −78° to −210° C. immediately prior to welding.

4,465,225

CONSTRUCTION OF UNIVERSAL EGG CELL CUSHION

Kenneth D. Bixler, Huntington, N.Y.; Henry A. Lord, Cape Elizabeth, Me., and Richard F. Reifers, New Canaan, Conn., assignors to Diamond International Corporation, New York, N.Y.

Division of Ser. No. 306,980, Sep. 29, 1981, Pat. No. 4,394,214. This application Nov. 16, 1982, Ser. No. 442,069
Int. Cl.³ B65D 85/32
U.S. Cl. 229—2.5 EC 11 Claims



1. A molded egg cell for a molded egg carton, wherein said egg cell includes a bottom side walls extending upwardly and outwardly from said bottom and a section of said side walls form part of an up-post, said cell being further characterized in that said cell includes

a vertically elongated hollow cushion or pillopad extending inwardly from said up-post part in the general direction of the central vertical axis of the cells

said cushion or pillopad being of relatively thin walled formation as compared with the wall thickness of the main body of cell and up-post, and extending generally vertically downward from a place near the top of the post to and terminating at a place near the middle of the height of the up-post

said cushion or pillopad being of generally convex vertical and horizontal section on its surface on the interior of the cell and of generally concave vertical and horizontal section on the cell exterior

said cushion or pillopad being deformable and collapsible when fat eggs are loaded in the cell and also when a corresponding cell of another carton is nested therein under some pressure before open cartons including said cell arrive at the egg-loading station of an egg packer,

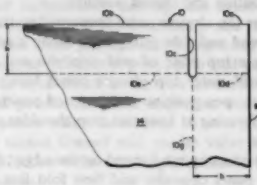
wherein the cushion or pillopad is of free dried molded pulp and the fibers therein are uncompressed.

4,465,226

PAPERBOARD TRAY CORNER CONSTRUCTION

Thomas L. Flanagan, Killingworth, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Feb. 26, 1982, Ser. No. 352,801
Int. Cl.³ B65D 5/26
U.S. Cl. 229—32 6 Claims



1. A generally rectangular tray blank for packaging cylindrical articles of diameter D, said blank consisting of a generally rectangular bottom panel with sides and ends defined by lines of weakening, oppositely paired side and end flaps integrally connected to said bottom panel and said sides and ends thereof respectively, said side and end flaps having outer marginal edges spaced from said lines of weakening by a dimension h such that the ratio D/h is equal to or less than three to one, each side flap having end portions defining L-shaped slots adjacent the corners of said tray blank, each L-shaped slot having one leg aligned with the line of weakening between said bottom panel and one of said end flaps, and each L-shaped slot having its other leg generally aligned with the line of weakening between said bottom panel and one of said side flaps, said other leg of each L-shaped slot having a slot width Δ such that one side of said other leg slot width Δ is aligned with the line of weakening between said bottom panel and said one side flap, and the other side of said other leg slot width Δ being aligned with a line of weakening across said end flap and which is spaced from the end of said end flap by a distance h plus Δ to define a corner tab.

4,465,227

LEAK-PROOF CARTON

Paul F. Hood, Stamford, Conn., and Frank W. Locke, Minneapolis, Minn., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 446,375, Dec. 2, 1982, abandoned. This application Jan. 6, 1984, Ser. No. 568,955
Int. Cl.³ B65D 5/22
U.S. Cl. 229—36 8 Claims

1. A leak-proof carton formed from a one-piece blank of corrugated paperboard, said carton comprising:

(a) a bottom wall panel;

(b) side and end wall panels foldably connected to side and end edges of said bottom wall panel and extending perpendicular to said bottom wall panel;

(c) means forming leak-proof corners interconnecting corner edges of said side and end wall panels;
(d) an inner top closure panel connected to one of said end and side wall panels along a first fold line defining a top edge of said one of said end and side wall panels, said inner top closure panel being approximately the same size as said bottom wall panel and being pivotable between an open position and closed position;
(e) an outer top closure panel connected to the opposite one of said end and side wall panels along a second fold line defining a top edge of said opposite end and side wall panel, said outer top closure panel being pivotable between an open position and a closed position;
(f) means forming at least one stop shoulder on said second fold line;
(g) at least one stop tab formed on the edge of said inner top closure panel opposite said first fold line, said stop tab being rigidly connected to said inner top closure panel and being aligned with said stop shoulder and coplanar with said inner top closure panel when said inner top closure panel is pivoted to said closed position; and
(h) top closure panels foldably connected to top edges of said end wall panels.

4,465,228

COOKER WITH HEATING CONTROL SYSTEM

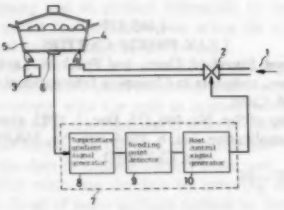
Keiichi Mori, Izumiotsu; Shojiro Inoue, Kitakatsuragi, and Manabu Takada, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 26, 1982, Ser. No. 411,954

Claims priority, application Japan, Sep. 9, 1981, 56-142688; Sep. 10, 1981, 56-143684; Oct. 9, 1981, 56-161644; Jan. 14, 1982, 57-4068

Int. Cl.³ A47J *27/00*; F23N *1/08*

U.S. Cl. 236—20 A **21 Claims**



1. A cooker comprising:
heating means for heating food material in a container,
temperature measuring means for measuring temperature of outer face of the container, and issuing temperature signals,
heat amount control means for controlling amount of heat issued from the heating means and
a heat control circuit part for issuing a control signal to be given to the heat amount control means based on said temperature signals input thereto,
said heat control circuit part comprising temperature gradient signal generator means for producing signal of temperature gradient from the input temperature signal, bending point detector means for detecting bending point of the temperature increase and issuing a detection signal and heat control signal generator for outputting the control signal for the heat amount control means basing at least on output of the bending point detector.

4,465,229

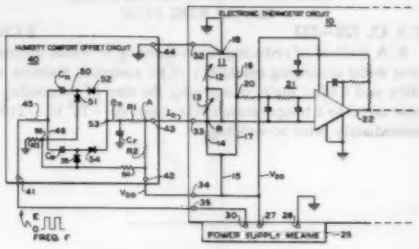
HUMIDITY COMFORT OFFSET CIRCUIT

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 25, 1982, Ser. No. 436,742

Int. Cl.³ F24F *11/00*; F25D *11/04*

U.S. Cl. 236—44 E **8 Claims**



1. A humidity comfort offset circuit having output means adapted to be connected to a bridge circuit of a thermostat to adjust the thermostat to maintain a comfortable temperature as humidity changes, including: humidity responsive circuit means having output circuit means adapted to be connected to said thermostat bridge to change the balance of said bridge as humidity changes to maintain a comfortable temperature; said humidity responsive circuit means including a capacitive element that changes in capacity with change in humidity; power supply means to energize said humidity responsive circuit means to supply said output circuit means with a signal that varies with humidity; said power supply means providing an alternating current potential to said humidity responsive circuit means to periodically charge said capacitive element; said power supply means further providing a direct current potential to said humidity responsive circuit output means to in turn provide said signal that varies with humidity; said output circuit means being so arranged and designed as to have an output range with at least one humidity value being equal to a balance value of said bridge so that said humidity responsive circuit has no effect on said thermostat at said value; and said thermostat temperature control is decreased as humidity increases, and said thermostat temperature control is increased as humidity is decreased from said balance value.

4,465,230

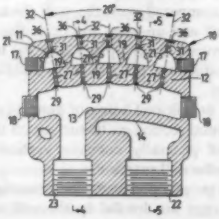
METHOD AND APPARATUS FOR MAKING SNOW

Robert M. Ash, P.O. Box 364, Banner Elk, N.C. 28604

Filed Jul. 12, 1982, Ser. No. 397,554

Int. Cl.³ F25C *3/04*

U.S. Cl. 239—2 S **7 Claims**



1. In apparatus for making snow comprising:
(a) a closed inner housing having a water receiving passageway therein and a uniformly curved outer surface,
(b) a closed outer housing incasing said inner housing and

having a uniformly curved inner surface spaced from said outer surface of said inner housing and defining a uniformly curved air receiving passageway therebetween,

(c) air supply means supplying air under pressure to said air receiving passageway,

(d) water supply means supplying water under pressure to said water receiving passageway,

(e) a plurality of spaced apart separator vanes extending in the direction of air flow between said uniformly curved inner surface of said outer housing and said uniformly curved outer surface of said inner housing and defining uniformly curved air flow chambers therebetween which divide the air flowing through said air receiving passageway into a plurality of laminar flowing columns of air,

(f) a plurality of spaced apart elongated water discharge orifices through a side of said inner housing with each said elongated water discharge orifice being of a size and length to eject a laminar flowing jet stream of water into an adjacent uniformly curved air flow chamber,

(g) a plurality of spaced apart, elongated discharge chambers extending through the side of said outer housing nearest said water discharge orifices in said inner housing with each said elongated water discharge orifice being in axial alignment with an adjacent elongated discharge chamber extending through said outer housing and directing its laminar flowing jet stream of water through the center of said adjacent elongated discharge chamber with each of said laminar flowing columns of air passing uniformly around and surrounding its jet stream of water as it moves through said air flow chamber and then through said elongated discharge chamber, and

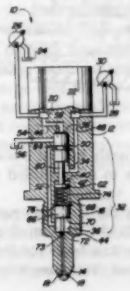
(h) said elongated discharge chamber in said outer housing being of a size and length to maintain said jet stream of water and its column of air passing therethrough in laminar flow.

4,465,231

CONTROL DEVICE AND METHOD FOR ACTIVATING A FUEL INJECTOR NOZZLE

Richard F. Sharp, Perry, Okla., assignor to Deere & Company, Moline, Ill.

Filed Mar. 29, 1982, Ser. No. 362,815
Int. Cl.³ F02D 7/00
U.S. Cl. 239—5 **22 Claims**



1. A control device for opening and closing a fuel injector nozzle, comprising:

(a) first and second cavities formed in said fuel injector with said second cavity located approximate said nozzle;

(b) first and second sources of pressurized fluid communicating with said respective cavities;

(c) means for regulating the flow of pressurized fluid to said cavities;

(d) a pressure activated differential area needle valve reciprocably mounted in said second cavity for movement between an open position permitting fluid flow through said nozzle and a closed position preventing fluid flow through said nozzle;

(e) a spring positioned in said second cavity and abutting a top surface of said needle valve;

(f) a controller positioned in said first cavity which can act against said spring in a direction tending to move said needle valve toward said closed position; and

(g) means for reciprocably moving said controller means relative to said needle valve whereby said needle valve moves to said open position and compresses said spring upon sensing an increase in pressure in said second cavity and remains open do to an increase in surface area over which said pressurized fluid impinges, and closes at a higher pressure value in relation to movement of said controller means toward said needle valve compressing said spring further before moving said needle valve to said closed position.

18. A method for controlling the opening and closing of a fuel injector nozzle, said fuel injector having first and second cavities formed therein, first and second sources of pressurized fluid communicating with said respective cavities, means for regulating the flow of pressurized fluid to said cavities, a differential area needle valve reciprocably mounted in said second cavity for movement between an open position permitting fluid flow through an outlet passage in said nozzle and a closed position preventing fluid flow through said outlet passage, said needle valve having intermediate and bottom surfaces facing toward said outlet passage, a spring positioned in said second cavity for urging said needle valve to said closed position, and controller means contacting said spring and capable of transmitting a force against said needle valve in a direction tending to move said needle valve toward said closed position, said method comprising the steps of:

(a) subjecting said intermediate surface of said needle valve to said second source of pressurized fuel sufficient to compress said spring and move said needle valve to said open position whereby said bottom surface of said needle valve is exposed to said pressurized fuel and contributes in retaining said needle valve in said open position;

(b) subjecting said controller means to said first source of pressurized fuel sufficient to move said controller means toward said needle valve thereby further compressing said spring, said spring being compressible to a predetermined value such that when said predetermined value is reached, a mechanical link is formed between said needle valve and said controller means;

(c) applying sufficient pressure to said controller means from said first source of pressurized fluid to force said needle valve toward said closed position whereby the area of said bottom surface of said needle valve exposed to impinging pressure is decreased and the amount of force exerted on said intermediate surface of said needle valve is insufficient to prevent said spring from expanding, such expansion cooperating with said downward movement of said controller means to cause said needle valve to move to said closed position under greater pressure than needed to move said needle valve to said open position.

4,465,232

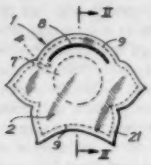
DEVICE FOR CARRYING A SCENTED ELEMENT FOR AFFIXING TO THE BODY, ARTICLES OF CLOTHING OR PACKAGES

Florence F. Field, 180 West End Ave., New York, N.Y. 10023

Filed Jun. 4, 1982, Ser. No. 384,865
Int. Cl.³ A61L 9/04; G09F 3/00
U.S. Cl. 239—36 **5 Claims**

1. A fabric adornment for the free emission of scent comprising a decorative textured embroidered fabric front face, a fabric rear face, adhesive means disposed on said rear face adapted to fix said adornment to another surface, said front face and rear face forming a pocket having one permanently

open side on said front face, and said pocket adapted to slidably receive and remove a scented element in the form of a scent



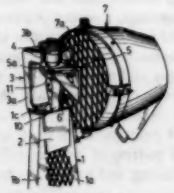
impregnated lozenge, whereby an adornment is adapted to provide scent over a protracted period of time.

4,465,233

SPRAYING DEVICE, PARTICULARLY FOR TREATMENT OF PLANTS

Patrick J. Ballu, Reims, France, assignor to Tecnoma, Epernay, France

Filed Jun. 18, 1982, Ser. No. 389,951
Claims priority, application France, Jun. 26, 1981, 81 12624
Int. Cl.³ B05B *9/06*
U.S. Cl. 239—77 **7 Claims**



1. Spraying device which can be carried or drawn by a tractor, in particular for the treatment of plants, having a drive shaft of fixed direction, a transmission system for communicating the movement of the shaft to a blower or a rotary fan, carried by a support, at a certain distance from the drive shaft, and means which allow, in a plane substantially parallel to the drive shaft, the orientation of the assembly comprising the fan and the atomizing bodies to be varied with respect to the fixed direction of the drive shaft, wherein the transmission system of the device essentially comprises a flexible belt coupling the drive shaft, of fixed direction, to an extension of the shaft of the fan, and that the whole assembly comprising the fan and atomizing bodies is pivotably mounted on the corresponding end of the support using a spindle which is arranged in the region of the perpendicular (P) common to the drive shaft and the extension of the shaft of the fan, on the other side to the belt with respect to said extension.

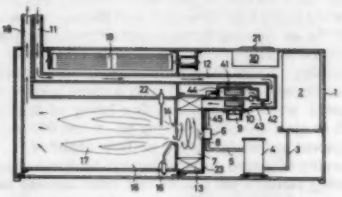
4,465,234

LIQUID ATOMIZER INCLUDING VIBRATOR

Naoyoshi Maehara, and Takashi Uno, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 5, 1981, Ser. No. 309,014
Claims priority, application Japan, Oct. 6, 1980, 55-140318; Oct. 13, 1980, 55-143480
Int. Cl.³ B05B *3/14*
U.S. Cl. 239—102 **16 Claims**

1. An atomizing apparatus comprising:
(a) a body having a cavity for containing a liquid filled therein;
(b) a nozzle base mounted on said body, the nozzle base having a plurality of orifices in fluid flow relation with the liquid in said cavity;
(c) an electric vibrator mounted on said body, the vibrator being movable for cyclically pressurizing the liquid in said cavity, the vibrator, cavity, nozzle base and plurality of orifices being arranged so that liquid in the cavity flows into the nozzle base through the plurality of orifices in response to the vibrator cyclically pressurizing the liquid in the cavity;
(d) means for filling and maintaining the liquid in said cavity at a pressure no greater than substantially atmospheric pressure;



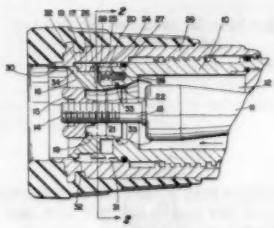
(e) electric means for supplying an alternating voltage to said electric vibrator to displace the vibrator back and forth periodically, whereby said liquid in said cavity can be pressurized to be successively expelled as atomized droplets out of said orifices; and
(f) means operatively coupled with said filling means for delivering air to carry therewith said atomized droplets expelled out of said orifices.

4,465,235

FIRE-FIGHTING NOZZLE WITH SELECTIVE FLUSH CONTROL MECHANISM

George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Filed Aug. 17, 1982, Ser. No. 409,013
Int. Cl.³ B05B *1/32, 15/02*
U.S. Cl. 239—107 **2 Claims**



1. In a fire-fighting nozzle having a water-flow passageway extending therethrough to a controlled discharge outlet, the combination of:
a hollow nozzle body defining said passageway,
a discharge throat slidably mounted coaxially on the forward end of said nozzle body for longitudinal movement relatively thereto and presenting a forward flow-directing surface,
a baffle assembly slidably carried coaxially by said nozzle body for longitudinal movement relatively thereto,
said baffle assembly presenting a baffle head in forward overlying relationship to said discharge throat to define a variable flow discharge outlet therebetween,
means yieldably retaining said discharge throat in a forwardmost pre-determined position during flow-controlling movement of said baffle head,
a forward surface area provided on said throat and exposed to hydraulic discharge pressure of fluid from said outlet,
a rearward surface area provided on said throat and isolated from the hydraulic inlet pressure of fluid in said nozzle,

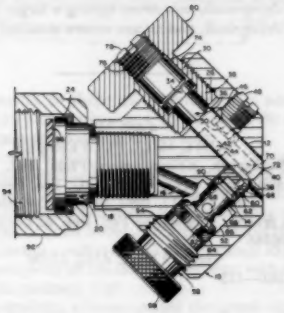
a transfer passageway between said forward and rearward surface areas for balancing the hydraulic pressures on said surface area to prevent pressure-responsive shifting of said throat from said forwardmost position,

and a coaxial member, external of said nozzle body, for selectively displacing said discharge throat rearwardly to a debris-flushing position relatively to said baffle head, in opposition to said retaining means.

4,465,236
ADJUSTABLE SPRAY NOZZLE

Oliver J. Calder, Orange, Calif., assignor to Phyllis Graham, Orange, Calif.

Filed Aug. 2, 1982, Ser. No. 404,369
Int. Cl.³ B05B 1/30
U.S. Cl. 239—391 **17 Claims**



1. A spray assembly comprising:

(a) a body having a through bore and a partial bore intersecting said through bore adjacent one end thereof;

(b) fluid inlet port means and a fluid passageway in said body communicating between said inlet port means and said intersecting bore;

(c) spray gun attachment means operatively secured to said body to permit the discharge of fluid into said inlet port means;

(d) a cylindrical splash pin having a beveled end slideably inserted into said through bore and retaining means associated therewith for fixed adjustability of its position in said through bore, with its beveled end positioned at the intersection of said through bore and partial bore; and

(e) an orifice spray nozzle member having an arcuately concave discharge face with a small diameter orifice received in said partial bore and secured at the intersection of said through bore and intersecting bore by orifice member retaining means also received in said partial bore.

4,465,237
INJECTION SYSTEM FOR INJECTING TWO FUELS THROUGH ONE INJECTION NOZZLE

Heinz Küpper, Troisdorf-Sieglar, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz A.G., Cologne, Fed. Rep. of Germany

Filed May 4, 1982, Ser. No. 374,911
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117796
Int. Cl.³ F02M 43/00
U.S. Cl. 239—533.3 **4 Claims**

1. An injection nozzle for injecting two fuels, namely a main fuel and an ignition fuel, by means of a single injection nozzle, into the combustion chamber of an internal combustion engine, said injection nozzle comprising:

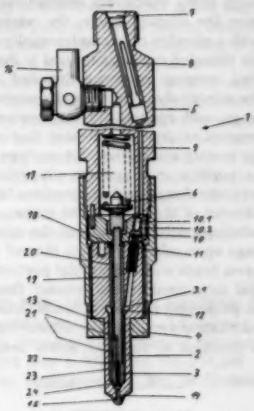
a nozzle body;

a nozzle needle displaceably arranged in said nozzle body, said nozzle body being provided with a seat for the tip of said nozzle needle;

a main fuel line structurally in communication with a supply of main fuel and being adapted to be relieved of pressure;

an ignition fuel line structurally in communication with a supply of ignition fuel, both of said fuel lines supplying fuel separately to said injection nozzle, with fuel from said fuel lines first encountering each other within said nozzle body of said single injection nozzle in the region of the tip of said nozzle needle; and

a pressure-relief valve provided in said injection nozzle and installed in said main fuel line therewith for closing said main fuel line when the latter is in a pressureless state, said

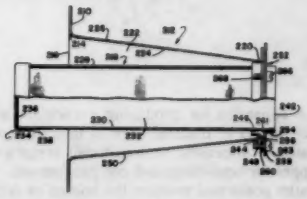


pressure-relief valve including a piston, and a spring for loading said piston, said piston, as a result of the resilience of said spring, being adapted to create a relief space between said pressure-relief valve and said seat of said nozzle needle, said nozzle needle being provided with at least one discharge opening in its tip region near said needle seat for establishing communication between said ignition fuel line and said main fuel line structurally operatively associated therewith; and which includes a shut-off element in said ignition fuel line, in the immediate vicinity of said at least one discharge opening, for selectively effecting and preventing said communication between said ignition fuel line and said main fuel line.

4,465,238
FILTER FOR HOT AIR NOZZLE

Jhina Patel, and James P. Van Swearingen, both of 25000 Miles Rd., Cleveland, Ohio 44128

Filed Sep. 4, 1981, Ser. No. 299,468
Int. Cl.³ B05B 1/14
U.S. Cl. 239—590.3 **1 Claim**



1. In a nozzle having a nozzle interior and a nozzle port, the improvement comprising filter apparatus for use inside the nozzle, said filter apparatus comprising an elongate filter element having an exterior and an interior, an opening communi-

cating with the interior, and permeable surfaces providing communication between said exterior and said interior including filter medium for filtering matter passing therethrough, and means for connecting the filter element to the nozzle in a position wherein the element extends into the interior of the nozzle and establishes communication between said opening and the nozzle port to filter matter passing through the nozzle, said connecting means comprising an adapter having a collar engaging the nozzle adjacent the port and having a flange extending radially outwardly from the collar, a retainer having a collar connected to the filter element adjacent the opening and having a flange extending radially outwardly from the collar of the retainer for mounting on the adapter flange, said retainer flange being selectively connectable to and disconnectable from the adapter flange, the retainer flange being provided with a plurality of circumferentially spaced openings aligned with threaded openings formed in the adapter flange, said threaded openings receiving threaded shafts of screws provided for selectively connecting the retainer flange to the adapter flange, said openings in the retainer flange having circular portions of diameter greater than the diameter of heads of the screws and having slot portions extending from the circular portions in a uniform circumferential direction with respect to the flange, said slot portions having widths less than the diameter of the heads of the screws, thereby permitting free relative axial movement of the retainer flange and adapter flange upon relative rotation thereof in a direction to align the screw heads with the circular portions and restricting relative axial movement of the retainer flange and adapter flange upon projecting the screw heads through the circular portions and relatively rotating the retainer flange and adapter flange in a direction to align the screw heads with the slot portions.

4,465,239

FEEDER ASSEMBLY FOR INSULATION BLOWING MACHINES

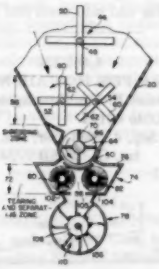
Homer G. Woten, 912 Perrin Ave., NW., Winter Haven, Fla. 33880

Continuation-in-part of Ser. No. 251,710, Apr. 6, 1981, Pat. No. 4,411,390. This application Sep. 28, 1982, Ser. No. 426,160

The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.

Int. Cl.³ B02C *17/16*

U.S. Cl. 241—98 **34 Claims**



1. An apparatus for producing particulate material from compact masses of material such as insulation materials and pneumatically dispensing such materials comprising,

a hopper for containing said compact masses,

an outlet positioned towards the bottom of said hopper,

a shredding zone located within an upper portion of said hopper for receiving said materials and shredding any large compact masses of said material into smaller masses or nodules,

a shredding means positioned in said shredding zone and including a plurality of rotating elements for receiving and shredding said compact masses,

a conveying means positioned below said shredding means and above said outlet for moving said material along said hopper,

a tearing and separating zone positioned below said outlet and receiving said material passing through said outlet to tear and separate any nodules of said material into particulate material,

said tearing and separating zone including a plurality of rotating brush elements through which said material passes to be torn and separated, and

a pneumatic transport means positioned below said tearing and separating zone to receive and dispense said particulate material,

said pneumatic transport means including a housing, a drive shaft positioned in said housing, a drum mounted around said drive shaft, said drum having a larger diameter than said drive shaft, and a vane means attached to said drum.

4,465,240

BOWL MILL PULVERIZER

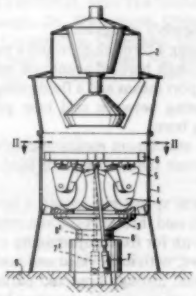
Ottmar Bacharach, Kaiserslautern/Pfalz, Fed. Rep. of Germany, assignor to Gebr. Pfeiffer AG, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,456

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106546

Int. Cl.³ B02C *4/32, 15/00*

U.S. Cl. 241—121 **4 Claims**



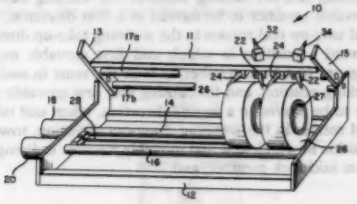
1. Bowl mill pulverizer comprising a foundation, a mill housing supported on and extending upwardly from said foundation, a milling bowl mounted in said housing for rotation about a vertical axis, milling rolls, stationary means located within said mill housing for supporting said milling rolls, said stationary means including a frame spaced upwardly from said bowl and free of contact with said mill housing, arms attached to and depending downwardly from said frame and rotatably supporting said milling rolls on said milling bowl, and pressing means attached to said frame and pressing said frame, arms and rolls downwardly so that said rolls press against said milling bowl, said frame having at least three sides with said sides intersecting and forming corners of said frame, each of said at least three sides having a centerline extending between a pair of the corners of said frame, said pressing means comprises pull rods each attached to one corner of said frame with said pull rods inclined to the vertical and extending downwardly and outwardly from said frame and secured to said foundation, with each said pull rod located in a vertical plane including the centerline of one of said sides of said frame forming the corner from which said pull rod depends.

4,465,241

APPARATUS AND METHOD FOR SHAPING A WOUND YARN PACKAGE

Herbert C. Merritt, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1983, Ser. No. 479,737
Int. Cl.³ B65H 54/00
U.S. Cl. 242—1 16 Claims



1. An apparatus to shape the shoulders of a substantially cylindrical yarn package having a lip formed at the shoulders of the package, said apparatus comprising:

means for rotating said yarn package about its central axis;

a pair of rotatable elongated shaping elements movable into and out of contact with a point on said shoulders, the longitudinal axis of said shaping elements being positioned at an angle of from about 5 degrees to about 65 degrees with respect to a radius of said yarn package extending to the contact point of the shaping elements with the shoulders of the package; and

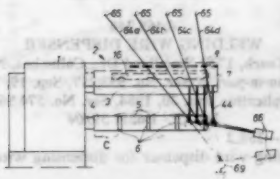
means for applying a force to said elongated shaping elements, said force having a component directed toward said shoulder.

4,465,242

METHOD AND APPARATUS FOR INSERTING THREADS AND SIMILAR ITEMS INTO A WINDING DEVICE

Necati Ari, Winterthur, and Ruedi Schaeeberger, Seuzach, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

PCT No. PCT/EP81/00170, 371 Date Jun. 15, 1982, 102(e) Date Jun. 15, 1982, PCT Pub. No. WO82/01540, PCT Pub. Date May 13, 1982
PCT Filed Oct. 23, 1981, Ser. No. 395,036
Claims priority, application Switzerland, Oct. 31, 1980, 8117/80
Int. Cl.³ B65H 54/02, 54/20
U.S. Cl. 242—18 PW 8 Claims



1. A method of inserting threads or the like into a winding device including at least two traversing devices defining a thread traversing zone, bobbin tubes operatively associated thereto and each bobbin tube being provided with catching means for a related one of said threads, a bobbin chuck having an exterior end and carrying said bobbin tubes, a thread suction device and first thread guide means arranged above said winding device, said method comprising the steps of:

taking up each said thread by means of said thread suction device as the thread comes from said first thread guide means;

arranging lower thread guides in an initial position substantially adjacent said exterior end of said bobbin chuck;

placing said threads onto a second thread guide disposed above said at least two traversing devices and each said thread onto a related one of said lower thread guides in its initial position, so that each said thread is guided outside said thread traversing zone and assumes a substantially straightened position between said first thread guide means and related ones of said lower thread guides;

displacing said lower thread guides from said initial position thereof into a position in which each said thread placed on a related one of said lower thread guides is arranged in a predetermined zone in front of related catching means;

arranging a thread guide edge comprising a plurality of guiding notches, while displacing said lower thread guides from said initial position thereof, so as to catch each said thread in a related one of said guiding notches and such as to ultimately place each said thread by means of the related one of said lower thread guides and the related one of said guiding notches precisely in front of said catching means provided for the related one of said bobbin tubes;

inserting each of said threads into the related one of said catching means; and

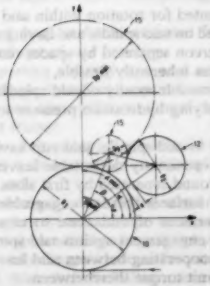
winding up said threads on said bobbin tubes.

4,465,243

METHOD FOR THE SHAFTLESS WINDING OF A WEB

Ewald G. Welp, Erkrath, Fed. Rep. of Germany, assignor to Jagenberg AG, Dusseldorf, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,569
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121039
Int. Cl.³ B65H 17/12
U.S. Cl. 242—66 5 Claims



1. In the shaftless winding of a web on two support rolls of different diameter and having parallel axes, the improvement which comprises employing support rolls whose axes are in different horizontal planes and wherein at the start of the winding operation as a function of a desired maximum web-roll diameter $D_\beta max$, the maximum pivot angle α_o for the small diameter support roll relative to the large-diameter support roll is set at

$$\alpha_o = +(\alpha_{max} - \beta_{max})$$

for a loosely wound, or low-density, web roll and at

$$\alpha_o = -\arctan\left[\frac{1}{\tan\beta_{max}}\left(\frac{D_1 + 2a + D_2}{\cos\beta_{max}(D_1 + D_{\beta max})} - 1\right)\right]$$

for a tightly wound, or high-density, web roll, where

$\alpha_{max} = 80$ to $90°$, and

$$\beta_{max} = \arccos\left(1 + \frac{A - D_{pmax} \times B}{C + D_{pmax} \times E}\right),$$

with

$A = 2\,a\,(a + D_2)$

$B = 2\,(a + D_2)$

$C = D_1\,(D_1 + 2a + D_2)$

$E = D_1 + 2a + D_2$

a=*support-roll clearance.*

4,465,244

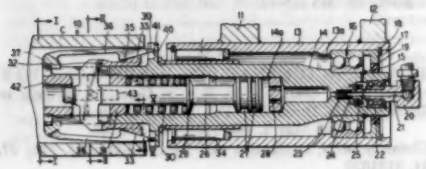
EXPANDING CORE CHUCK

Gerald W. Karr, South Beloit, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 28, 1981, Ser. No. 334,822

Int. Cl.³ B65H *75/24*; B23B *31/40*

U.S. Cl. 242—72.1 **10 Claims**



1. An expanding core chuck for insertion into a roll core comprising:

a housing,

a spindle mounted for rotation within said housing,

a cone mounted on said spindle and having angular camming surfaces thereon separated by spaces rendering said camming surfaces inherently flexible,

a piston reciprocable axially of said spindle,

means for applying hydrostatic pressure to one end of said piston,

a cup secured to said spindle, said cup having a plurality of radially independently deflectable leaves in spaced relation therearound separated by first slots, said leaves having angular surfaces thereon engageable by said angular camming surfaces of said cone to close the cone into tight-fitting engagement against said spindle, and

drive means cooperating between said leaves and said spindle to transmit torque therebetween.

4,465,245

AUTOMATIC LOCKING TYPE TAKE-UP DEVICE

Toshihiro Saikai, Fujisawa, Japan, assignor to NSK Warner K.K., Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,034

Claims priority, application Japan, Mar. 19, 1982, 57-38097[U]

Int. Cl.³ A62B *35/00*; B65H *75/48*

U.S. Cl. 242—107.4 D **5 Claims**

1. An automatic locking type take-up device comprising:

a base member;

a webbing take-up reel rotatably supported by said base member and biased in a direction to take-up webbing;

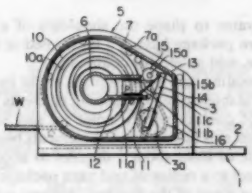
engaging means mounted on said take-up reel for engagement with a lock member to prevent rotation of said take-up reel in a webbing draw-out direction but to permit rotation of said take-up reel in the webbing take-up direction;

a webbing winding-amount sensing member rotatable in response to rotation of said take-up reel;

a lock member movably supported by said base member and capable of assuming a locking position in which it is engaged with said engaging means and a non-locking position in which it is not engaged with said engaging means;

a biasing member biasing said locking member toward said locking position;

a first movable member having means engaged with said winding-amount sensing member for causing said first movable member to be moved in a first direction, when said take-up reel rotates in the webbing take-up direction, toward a position in which said first movable member engages said lock member to hold the same in said non-locking position, and for causing said first movable member to be moved in a second direction, when said take-up reel rotates in the webbing draw-out direction, toward a position in which said first movable member is disengaged from said lock member; and



a second movable member having means frictionally engaging said first movable member for causing said second movable member to be moved, when said first movable member moves in said first direction, toward a position in which said second movable member is out of engagement with said lock member, and for causing said second movable member to be moved, when said first movable member moves in said second direction, toward a position in which said second movable member engages said lock member to hold the same in said non-locking position;

whereby when the webbing is substantially fully taken-up by said reel, said lock member is held in said non-locking position by said first member so that the webbing may be drawn out from said reel and later, during draw-out of the webbing, said lock member is held in said non-locking position by said second member, and thereafter, when a small amount of webbing is taken up by said reel, said lock member is disengaged from both said first and second movable members and moved to said locking position by said biasing member so as to prevent the rotation of said take-up reel in the webbing draw-out direction.

4,465,246

WELDING WIRE DISPENSER

Delmar D. Kosch, 1730 Woodland Dr., Columbus, Nebr. 68601

Continuation-in-part of Ser. No. 533,217, Sep. 19, 1983. This application Jan. 30, 1984, Ser. No. 574,867

Int. Cl.³ B65H *59/04*

U.S. Cl. 242—156.2 **1 Claim**

1. A welding wire dispenser for dispensing wire to a wire feeder,

a support means including a hub means thereon, said hub means having a horizontally disposed annular portion at its upper end,

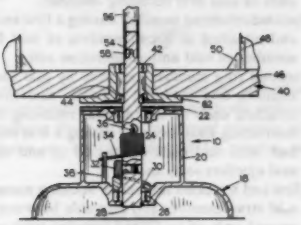
a vertically disposed and vertically movable shaft rotatably mounted in said support means and extending upwardly therefrom through said hub means,

a coil support means rotatably mounted on the upper end of said shaft above said hub means and vertically movable with said shaft, said coil support means having a horizontally disposed annular portion at its lower end adapted to

frictionally engage said annular portion on said hub means to limit the rotation of said coil support means when said annular portions are in frictional engagement with each other, said coil support means adapted to support a coil of welding wire thereon,

an arm means removably secured to the upper end of said shaft and having an outer end portion disposed laterally of the coil of wire on the coil support means,

a pulley rotatably mounted about a vertical axis on the outer end portion of the arm means adapted to have the welding wire on the coil extending therearound,



a helical cam means in said hub extending around at least a portion of said shaft,

a cam follower mounted on said shaft in engagement with said cam means whereby said cam follower will travel upwardly on said cam means thereby vertically moving said shaft so that said annular portions will not be in frictional engagement with each other so that said coil support means may freely rotate when said arm means is moved towards the wire feeder,

and a spring means in operative engagement with said shaft which yieldably resists the rotation of said shaft as said cam follower travels upwardly on said cam means.

4,465,247

MAGNETIC TAPE TRANSPORT APPARATUS

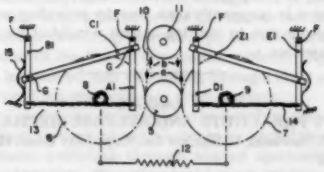
Lothar Gliniorz, Frankenthal; Peter Dobler, Ludwigshafen, and Klaus Schoettle, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,510

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034989

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—192 **8 Claims**



2. A magnetic tape transport apparatus consisting essentially of a frame; two axles carried by the frame; a supply and a take-up reel, each carried by one axle; at least one annular rotating drive member for simultaneously driving both reels by surface engagement thereof with the periphery of each reel at one point of contact, each axle being movable relative to the drive member; biasing means for applying compressive forces at the points of contact of the reels with the drive member; and a braking device, allotted to each reel, which brakes whichever reel is serving as the supply reel, thus generating tension in the span of tape between the reels, wherein each braking device consists of two lateral levers each having a fixed fulcrum point and an interconnecting lever with each end hingedly connected to each lateral lever at a movable pivot point, and a braking cable circumferentially surrounding the axle of the reel in spatial relationship thereof, the ends of two levers being connected via the braking cable which is wound around the axle of the reel, and automatically adjust the transmission of force, and wherein the braking devices which are essentially of the same design and are arranged in mirror-image relationship, act together in such a way, depending on the momentary direction of rotation of the reels, that at the axle supporting the supply reel the frictional force produced by the cable wrap becomes effective and at the axle supporting the take-up reel the frictional force is less, as a result of which the axle of the take-up reel runs relatively freely whilst the axle of the supply reel is braked.

4,465,248

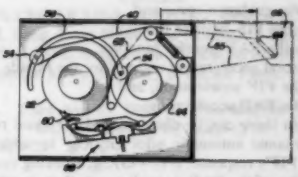
TAPE DRIVE MECHANISM

Gerhard Rotter, Mission Viejo, Calif., assignor to Rosso Corporation, Irvine, Calif.

Filed Dec. 7, 1981, Ser. No. 327,769

Int. Cl.³ G11B *15/26, 15/43, 15/66*; B65H *23/08*

U.S. Cl. 242—192 **26 Claims**



1. A belt driven tape transport, comprising:

a housing;

a tape transport support frame mounted for sliding movement into and out of said housing;

means for supporting a supply tape pack and a take-up tape pack on said tape transport support frame;

a drive motor and drive pulley mounted on said tape transport support frame;

an endless drive belt engageable with said drive pulley and with at least a ninety-degree peripheral portion of both tape packs; and

means for automatically disengaging said drive belt from the supply tape pack when said tape transport support frame is moved out from said housing, thereby facilitating tape loading and unloading, said means for automatically disengaging said drive belt including means affixed to said housing, for engaging said drive belt and thereby effecting its disengagement from the tape supply pack when said tape transport support frame is moved out from said housing.

4,465,249

LATERAL ACCELERATION CONTROL METHOD FOR MISSILE AND CORRESPONDING WEAPON SYSTEMS

Gérard Sélince, Massy, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 26, 1982, Ser. No. 362,423

Claims priority, application France, Apr. 1, 1981, 81 06541

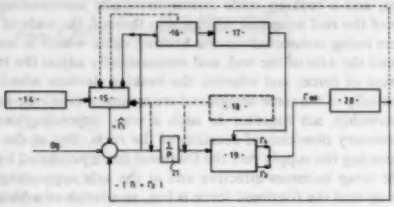
Int. Cl.³ F41G *7/22*

U.S. Cl. 244—3.15 **3 Claims**

1. A lateral acceleration control method with commands for a missile comprising an aerodynamic automatic pilot, providing a very low response time to commands, even of great amplitude, wherein said control method comprises the association of:

an aerodynamic control system having a great lateral acceleration capability, called PAF,

with a force control system close to the center of gravity of



said missile, and having a moderate lateral acceleration capability but a very short response time, called PIF;

said association being such that its overall response to a command is given by the following equation:

$$\Gamma ex = \left(\frac{G(p) \cdot Og}{\Gamma 1} + \frac{[F(p) \cdot (1 - G(p)] Og}{\Gamma 2} \right)$$

in which:

Og=the guidance command,

F(p)=the PIF transfer function,

G(p)=the PAF transfer function,

Γex=total acceleration realized by the missile,

Γ1=the PIF acceleration, and

Γ2=the PAF acceleration;

and wherein there can be distinguished the usual response of the aerodynamic automatic pilot G(p)Og, to which there is added the PIF's response, F (1−G)Og, working on the error, (1−G(p))Og, of the PAF, in such a way that, in addition, and in the presence of a constant command and after a delay equal to the response time of the PAF, the PIF is entirely available for realizing a new action.

4,465,250

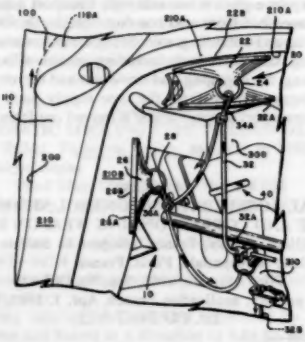
WINDBLAST LEG PROTECTOR ASSEMBLY

Robert J. Cummings, Hermosa Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1983, Ser. No. 465,230

Int. Cl.³ B64D *25/06*

U.S. Cl. 244—122 AG **8 Claims**



1. A windblast leg protector assembly for use by an occupant of an ejection seat of an aircraft, said ejection seat having a lower front center panel portion, and wherein said occupant is wearing an anti-acceleration suit with a full length leg member having a thigh portion and a calf portion for each leg of said occupant, said windblast leg protector assembly comprising:

a. means, for each leg of said occupant, for restraining said leg during ejection of said seat and of said occupant together from said aircraft wherein said restraining means includes said anti-acceleration suit full length leg member for that leg and further includes

a first retaining member having a first end and a second end attached to said thigh portion of said full length leg member of said anti-acceleration suit,

a first ring member captured by said first retaining member and movable between said first and second attached ends of said first retaining member,

a second retaining member having a first end and a second end attached to a calf portion of said full length leg member of said anti-acceleration suit,

a second ring member captured by said second retaining member and movable between said first and second attached ends of said second retaining member, a leg restraining strap member having a first end and a second end with said ends connected to and integrated with said ejection seat, and

a first and a second releasable hooking means captured by said strap member and movable between said first and second ends of said strap member with said first hooking means releasably hooked to said first ring member, and with said second hooking means releasably hooked to said second ring member;

b. said first and second retaining members each including an essentially rectangular-shaped piece of fabric having a load spreading concave cut between each of said first and second attached ends; and

c. means, operably connected to said ejection seat and to said anti-acceleration suit full length leg member for that leg, for releasably securing said leg restraining means to said ejection seat, said releasably securing means including

said first end of said leg restraining strap member connected to said lower front panel portion of said ejection seat, means for holding and retracting said leg restraining strap member with this means operably associated with said ejection seat, and

said second end of said leg restraining strap member connected to said holding and retracting means;

whereby during ejection of said ejection seat and of said occupant thereof together from said aircraft, said full length leg member of said anti-acceleration suit, for each leg of said seat occupant with said occupant's leg therein, is pulled downwardly, thereby restraining said leg from being extended into the windblast during ejection, and

whereby the thigh of said occupant's leg is downwardly restrained, while nevertheless the calf of said occupant's leg is permitted to move upwardly to relieve any tension in occupant's knee, thereby providing support and protection to said leg against windblast forces during ejection.

4,465,251

TOY PARACHUTE AND RELEASE MECHANISM

Larry E. Newbold, 10 Shadow La., Cape May Court House, N.J. 08210

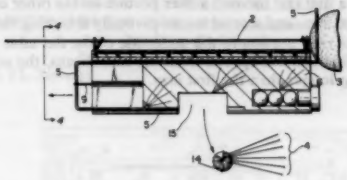
Filed Jul. 19, 1982, Ser. No. 399,258

Int. Cl.³ A63H *27/08*

U.S. Cl. 244—155 R **6 Claims**

1. A release device for a parachute comprising a body having means thereon adapted on said body to support the same on an elongated monofilament, a recess formed in said body, an exterior groove on said body having a movable member slidable in said groove and an exterior sleeve providing a bearing surface for said movable member and an exterior boundary for said groove, a movable member disposed on said body and including a portion adapted to move from a normally closed position with respect to said recess wherein a parachute is

adapted to be held captive to a position wherein the same is opened to release the same, abutment means adapted to be positioned on said monofilament forwardly of said body and adapted to be engaged by said movable member for moving



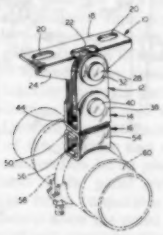
the said portion to an open position to release said parachute, and elastic biasing means connected to said body and movable member maintaining the latter in its closed position wherein the body includes an opening adapted to receive variable weights.

4,465,252

COMPACT UNIVERSAL HANGER FOR TAILPIPES AND THE LIKE

Edmund D. Donovan, Jr., and Roy S. Florian, both of Southington, Conn., assignors to Nickson Industries, Inc., Plainville, Conn.

Filed Apr. 8, 1983, Ser. No. 483,137
Int. Cl.³ E21F *17/02*
U.S. Cl. 248—60 **8 Claims**



1. In a hanger for tailpipes and the like, the combination comprising:

A. a mounting bracket having a generally inverted L-shaped cross section with the horizontal leg having a multiplicity of spaced mounting apertures therethrough for securing the bracket to a vehicle frame or the like and further having a strap aperture extending therethrough and along a substantial portion of the line of intersection with the depending vertical leg thereof, said vertical leg having a pivot aperture therethrough aligned with said strap aperture;

B. a pair of resiliently deflectable strap members on opposite sides of said vertical leg and pivotably supported thereon by pivot means extending through aligned apertures in the upper end portions thereof and said pivot aperture of said other leg, the ends of said strap members adjacent said angle bracket being of convexly arcuate configuration and extending at least to the plane defined by the lower surface of said horizontal leg, said straps also having aligned apertures therethrough adjacent the lower end thereof;

C. a support bracket of generally U-shaped cross section defined by vertical legs and a bottom web, said bracket having aligned apertures in its vertical legs aligned with said apertures of said straps adjacent said lower end thereof;

D. pivot means extending through said aligned apertures of said support bracket legs and straps;

E. hanger means depending from said hanger bracket and adapted to provide pipe support means;

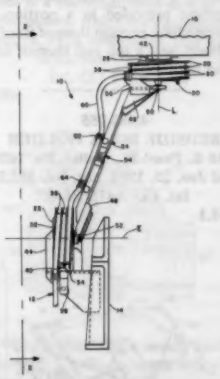
F. pivot means pivotably mounting said hanger means to the web of said support bracket, whereby said support bracket will pivot said hanger means about an axis lying in substantially the same plane as said other leg of said mounting bracket and said pivotal axes of said straps on said support and mounting brackets are substantially parallel during pivoting of said elements relative to each other, and wherein the arcuate upper ends of said strap below said horizontal leg may pivot freely in the clearance provided by said strap aperture.

4,465,253

FLEXIBLE LINE SUPPORT ASSEMBLY

Clifford H. Lang, Long Beach, and Michael S. Biss, Westminster, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 19, 1983, Ser. No. 486,598
Int. Cl.³ B64G *1/10*; B60D *1/08*
U.S. Cl. 248—75 **5 Claims**



1. An assembly for supporting a flexible line between a base structure and an object body mounted to said base structure for movement about first and second orthogonal axes, comprising:

(a) a first support drum mounted on said base structure and coaxially aligned with said first axis;

(b) a second support drum mounted on said object body and coaxially aligned with said second axis;

(c) means defined on each of said first and second support drums for receiving looped portions of said flexible line and confining the same about said drums such that said lines can expand and contract about said drums as said object body moves relative to said base structure about said first and second axes; and

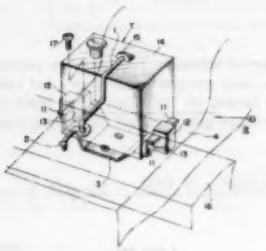
(d) an arm interconnecting said first and second support drums and supporting a portion of said flexible line which interconnects said looped portions thereof.

4,465,254

STRUCTURE FOR FITTING A TANK FOR AN AUTOMOTIVE VEHICLE

Masanori Murata, Yokohama, and Yutaka Takada, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 125,457, Feb. 28, 1980, abandoned. This application Jun. 10, 1982, Ser. No. 387,276
Claims priority, application Japan, Mar. 8, 1979, 54-28624[U]
Int. Cl.³ A47K *1/08*
U.S. Cl. 248—311.2 **12 Claims**



1. A structure for fitting a tank in an engine compartment of a vehicle body, comprising:

a bracket for fixing the tank at its top portion relative to the vehicle body; and

means for positioning the tank at its bottom portion in its longitudinal and lateral directions relative to the vehicle body;

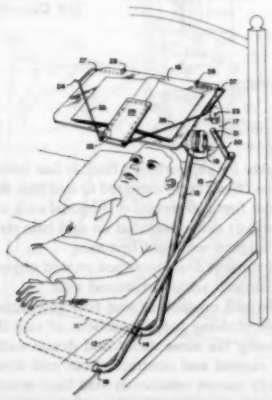
the bracket having a bottom end thereof engaged with an engaging portion provided in a portion of the vehicle body, an intermediate portion thereof fixed on a portion of the vehicle body, and a top end thereof adapted to sit on the top of the tank.

4,465,255

BEDSIDE BOOK HOLDER

David F. Hill, 544 E. Pearl St., Butler, Pa. 16001

Filed Jan. 25, 1982, Ser. No. 342,384
Int. Cl.³ A47B *23/00*
U.S. Cl. 248—441.1 **6 Claims**



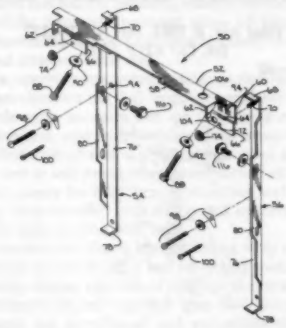
1. A bedside book holder for a flat table adapted to support reading material thereon comprising a flat table top, a flat base member adapted to be inserted between the mattress and spring of a bed, a first arm pivoted at one end on the outside end of the base member, a second arm pivoted at one end of the outside end of the base member spaced away from said flat table top from the first arm, first means pivotally attaching the other end of the first arm to the underside of the flat table adjacent a first end thereof, a riser portion on the other end of the second arm, and second means pivotally attaching the free end of the riser portion to the underside of the flat table adjacent its first end but spaced from the first means, the second arm being longer than the first arm.

4,465,256

MOUNTING DEVICE FOR RANGE HOODS

David W. Wolbrink; Kenneth J. Jonas, both of Hartford; Roland E. Butt, West Bend, and Robert W. Busch, Hartford, all of Wis., assignors to Broan Mfg. Co., Inc., Hartford, Wis.

Filed Nov. 24, 1981, Ser. No. 324,460
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—544 **9 Claims**



1. Improved mounting means for securing, by means of fasteners, a load bearing range hood to a horizontal framing member on a wall, the range hood having a hood portion positionable above the range, a pair of side elements, and a blower housing, said mounting means comprising:

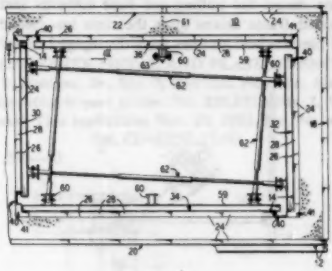
an elongated mounting plate suitable for being secured generally horizontally to the framing member, said mounting plate including a first flange portion lying in a horizontal plane when said mounting means is in use and a second flange portion depending from said first flange portion and lying in a vertical plane when said mounting means is in use, said first flange portion including spaced perforations adjacent said second flange portion for receiving the fasteners for said mounting means, the area of said first flange portion adjacent said perforations slanting downwardly with respect to the remaining portions of said first flange portion so that the fasteners may be inserted into the framing member in an upwardly slanting direction; and

a pair of hangers depending from said mounting plate at spaced locations therealong, each of said hangers having an upper end connected to said mounting plate, a lower, free, unconnected end, and an intermediate portion, said hangers containing means in the intermediate portions and on the lower ends for securing the range hood to said mounting means.

4,465,257
CONCRETE FORMING STRUCTURE HAVING A DOUBLE HINGE FILLER

Vernon R. Schimmel, Lincolnwood, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Jan. 15, 1982, Ser. No. 338,345
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.
Int. Cl.³ E04G 15/06; B28B 7/30
U.S. Cl. 249—11 24 Claims

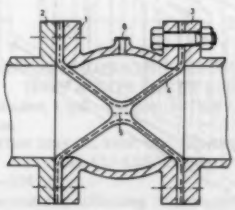


1. In a concrete forming structure including a collapsible form having at least one form panel section and an angle-shaped rigid non-hinging corner adjacent thereto and with the panel section having a forming face, a two-way hinge filler structure between said section and said rigid corner and with two-way hinge filler structure and its hinging action being apart from the angle-shaped rigid non-hinging corner, the hinge filler structure including a series of hinge plates with a pair of the hinge plates attached to said form, the hinge plates including a pair of spaced hinges joining said hinge plates in hinged assembly together and with the hinges lying in a plane common to the forming face of said section, and means for holding said panel section in a predetermined position to facilitate the pouring of the concrete and with said means being releasable, said panel section being pivotal on said hinges to effect disengagement of the panel section from the poured concrete, the hinges being cooperable with the hinge plates and the panel section to allow the panel section to collapse and move after release of said means for allowing the panel section to be readily disengaged from the thus formed poured concrete.

4,465,258
SLEEVE VALVES

Zvi Weingarten, Kibbutz Evron, Post Ashrat, Israel

Continuation of Ser. No. 197,968, Oct. 17, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,594
Claims priority, application Israel, Jun. 18, 1980, 60341
Int. Cl.³ F16K 31/145
U.S. Cl. 251—5 2 Claims

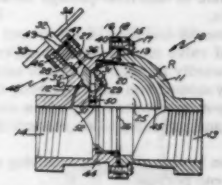


1. In a flow passage sleeve valve having a housing capable of being internally pressurized, and an elastomer sleeve positioned within the housing and extending longitudinally therein, said elastomer sleeve being defined by a generally constant thickness wall tapering inwardly from opposed substantially circular end portions to a narrow transversely elongate median region of greater transverse width than the circular end portions, the sleeve wall, at the median region, being internally enlarged relative to the wall thickness for the full transverse width of the sleeve to define an internal integral sealing member as an annular, inward projection forming a pair of transversely extending lips, said lips being transversely elongate across substantially the full width of said median region and integrally joined to each other at the opposed ends thereof, said median region forming an arcuate configuration at each of the joined ends of the lips to allow flexure of said lips relative to each other and engagement of the lips in sealed relationship without undue stress in said elastomer sleeve, said median region being configured to retain said lips closed in the absence of pressure both internally and externally of the elastomer sleeve, and further comprising means for imposing external pressure directly upon said lips and said sleeve to produce direct sealing engagement of said lips in a single action at external pressures equal to or greater than internal flow pressure on said sleeve.

4,465,259
CONTROL VALVE

Richard J. Allen, Warwick, R.I.; Raymond B. Allen, heir, and Alma L. Allen, heir, both of 32 La. 8 Gaspee Point, Warwick, R.I. 02888

Continuation-in-part of Ser. No. 244,031, Mar. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 145,041, Apr. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 943,043, Sep. 18, 1978, abandoned. This application Oct. 22, 1981, Ser. No. 313,801
Int. Cl.³ F16K 5/06
U.S. Cl. 251—304 7 Claims



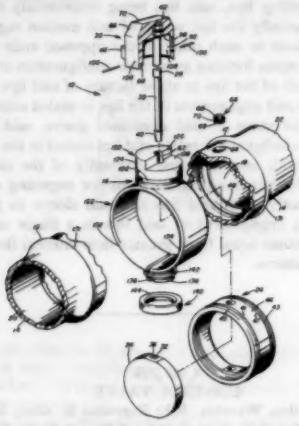
1. A control valve comprising a casing having a cylindrical passage therethrough, a casing portion lying outside the said passage to create a recess in the passage to receive a closure member, a valve seat within said passage and casing portion having an axial center at substantially the periphery of said cylindrical passage, said seat lying on an axis at right angles to said passage, a stem rotatably journalled in said casing through at least a part of said casing portion and having an axis intersecting at an acute angle at least a portion of the axis of said cylindrical passage, a closure member of a size to engage said valve seat and presenting a pressure face to at least the upstream side of the cylindrical passage above the valve seat and a back face to the downstream side of the passage below the valve seat whereby the pressure of the fluid on the upstream side of the passage forces the closure member onto its seat in closed position, said closure member on the downstream side receiving said stem and locked thereto to rotate with said stem from a closed position on said valve seat to an open position with its pressure face substantially parallel to at least a portion of the axis of said through passage and located in said recess.

4,465,260

PLASTIC VALVE AND IMPROVED ACTUATOR THEREFOR

Richard W. Conley, and Richard P. Tremblay, both of Pittsburgh, Pa., assignors to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Jun. 18, 1982, Ser. No. 389,953
Int. Cl.³ F16K 1/22
U.S. Cl. 251—305 **19 Claims**



11. A valve assembly comprising,

a valve body having an inlet and an outlet and an outlet connected by a flow passage,

a valve seat in said flow passage,

a valve member rotatably positioned in said valve seat for controlling the flow of liquid between said inlet and said outlet,

actuating means for turning said valve member to control the flow of fluid in said flow passage between said inlet and said outlet,

said actuating means including a lower end portion connected to said valve member and an upper end portion extending upwardly through and out of said valve body,

means externally mounted on said valve body for supporting said actuating means upper end portion and including a neck portion and a clamp portion connected to said neck portion,

said neck portion having a bore for receiving said actuating means upper end portion,

said actuating means upper end portion extending through said neck portion bore and rotatably positioned on said neck portion, and

said clamp portion extending downwardly from said neck portion into surrounding and clamping engagement with said valve body to transfer the torsional loads applied by said actuating means from said neck portion to the periphery of said valve body.

4,465,261

APPARATUS FOR PULLING AN ELECTRIC CABLE OR WIRE

Davis W. Giroux, 3 Lakewood Villa, Lake Manawa, Council Bluffs, Iowa 51501

Filed Nov. 29, 1982, Ser. No. 445,147
Int. Cl.³ B66D 1/26, 1/08, 3/00
U.S. Cl. 254—279 **7 Claims**

1. An apparatus for pulling a wire means between two locations, comprising in combination,

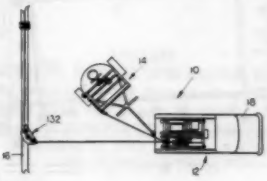
a first wheeled frame means having rearward and forward ends,

a rotatable pinch wheel mounted on said first wheeled frame means adapted to receive a torque balanced pulling rope therearound whereby rotation of said pinch wheel will cause the pulling rope to be pulled towards the rearward end of said first wheeled frame means, said torque balanced pulling rope having one end connected to the wire means,

a power means on said first wheeled frame means for rotating said pinch wheel,

a second wheeled frame means positioned rearwardly of said first wheeled frame means,

a powered rope puller mounted on said second wheeled frame means for pulling the rope towards said second wheeled frame means after the rope has passed around said pinch wheel and has been disengaged therefrom,



a pair of powered lifting arms vertically movably mounted on said second wheeled frame means,

a rope tender container positioned on the ground below said rope puller for receiving and storing the pulled rope therein after it has disengaged from said rope puller,

said lifting arms being selectively attachable to said container so that said lifting arms may lift said container from the ground for transporting said container,

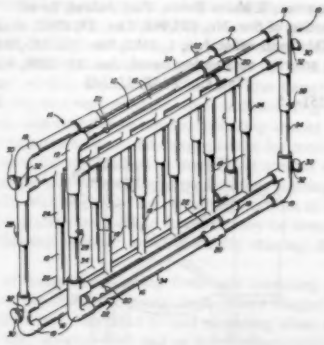
said pinch wheel and said rope puller including means to permit the rapid disengagement thereof with said rope whereby said first and second wheeled frame means may be moved to a different location without said container and pulling rope at any time during the pulling operation regardless of how much of the rope has been passed through the rope puller.

4,465,262

PORTABLE EXPANDABLE BARRIER

Gary Itri, and Mary Riley, both of 6023 Buffalo Ave., Van Nuys, Calif. 91401

Filed Jul. 14, 1982, Ser. No. 398,679
Int. Cl.³ E04H 17/16
U.S. Cl. 256—24 **5 Claims**



1. An improved portable expandable barrier, said barrier comprising, in combination:

(a) a first fence;

(b) a second fence interconnected to said first fence for sliding movement relative thereto to expand and contract said barrier,

(c) first locking means secured to said first and second fences to releasably lock said fences together; and,

(d) second locking means secured to said first and second fences to releasably lock said fences to a structure,

(e) wherein said fences include elongated bars and said locking means comprise cylinders slideably disposed over said bars and pins extending through said bars, said pins of each of said fences engaged with said sliding cylinders of the other of said fences.

4,465,263

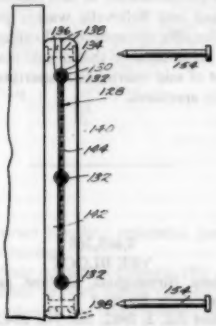
COMPOSITE METAL AND PLASTIC FENCE

Edward S. Robbins, Jr., Rte. 7, Box 322, Florence, Ala. 25630

Continuation-in-part of Ser. No. 239,377, Mar. 2, 1981, abandoned. This application Nov. 23, 1982, Ser. No. 443,885

Int. Cl.³ B21F *27/00*

U.S. Cl. 256—52 **4 Claims**



1. A fence comprising, in combination, an elongated web of vinyl plastic having spaced, substantially parallel edges along its length and a substantially flat web portion, each edge having an enlarged cross-section relative to said flat web portion and encasing a high tensile wire with each wire lying substantially in the plane of said web, a plurality of support bracket means for mounting on spaced fence posts, each bracket means having a first and a second bracket member with a face of each bracket member having recess means for receiving a portion of said spaced edges and said web of vinyl plastic and being alignable with the recess means on said second bracket member, the dimensions of said recess means when said bracket members are joined together being such that, when a load is applied to said elongated web, the surfaces of said recess means will prevent said edges of said web from moving out of said recess means, said bracket means having apertures for receiving fastening members for attaching said bracket means to a fence post.

4,465,264

APPARATUS FOR PRODUCING ACICULAR IRON OR IRON ALLOY PARTICLES

Lifun Lin, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 27, 1983, Ser. No. 499,009

Int. Cl.³ C25F *5/00*

U.S. Cl. 266—114 **9 Claims**

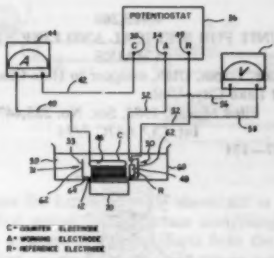
1. An apparatus for collecting ferromagnetic particles distributed in a strip of metal or metal alloy material, comprising:

means for electrochemically dissolving said metal or metal alloy material without substantial dissolving of said ferromagnetic particles, said means for electrochemically dissolving including:

a tank containing an electrolyte,

a support surface means in said tank being in electrical contact with the dissolving metal or metal alloy material, and

a working electrode comprising said support surface means and the metal or metal alloy material; and



magnetic field forming means associated with said support surface means for magnetically adhering dissolved ferromagnetic particles and pieces of metal or metal alloy material having undissolved ferromagnetic particles distributed therein to said support surface means so as to enhance the dissolution of the metal or metal alloy material and to maximize recovery of said ferromagnetic particles.

4,465,265

LANCE FOR BLOW TYPE REACTOR

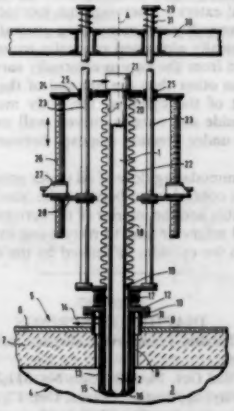
Alfred Kryczun, and Rolf Pufal, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,322

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225772

Int. Cl.³ C21C *5/32*

U.S. Cl. 266—226 **6 Claims**



1. A blow lance arranged to be positioned at an adjustable height through an opening in a reactor comprising:

a tubular lance,

a protective sleeve surrounding a lower portion of said lance

and proportioned to extend through said opening and project into said reactor,

fluid circulating means in said protective sleeve,

means for introducing a coolant into said fluid circulating means, and

a bellows surrounding said tubular lance and being expansible in the axial direction, said bellows having its lower end coupled to a lower portion of said lance and its upper end received about an upper portion of said tubular lance.

4,465,266

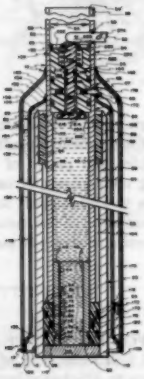
POWER UNIT FOR MEDICAL AND LIKE STOOLS AND CHAIRS

Dean H. Hale, Logan, Utah, assignor to Hale Chairco Corporation, Salt Lake City, Utah

Filed Mar. 8, 1982, Ser. No. 355,447

Int. Cl.³ A47C *7/14*

U.S. Cl. 267—131 **21 Claims**



1. A power unit for stools, chairs and the like comprising:

a cylinder assembly comprising a cylinder, a ram which is caused to telescopically reciprocate within the cylinder, a control valve across which oil flows under pressure to change the effective length of the power unit by extending and retracting the ram in respect to the cylinder;

a cylindrical exterior reservoir tank located external of the cylinder assembly and comprising generally hollow liquid tight vertically elongated generally annular body means suspended from the ram to externally surround (a) a part of the ram other than the top end of the ram and (b) at least part of the cylinder, the body means comprising spaced inside and outside curved wall means and an oil reservoir under pressure disposed between the two wall means;

means accommodating flow of oil under pressure selectively across the control valve between the interior of the cylinder assembly and the interior of the surrounding vertically elongated reservoir tank to retract and extend the ram in respect to the cylinder as desired by the user.

4,465,267

DIAPHRAGM SPRINGS

Jean-Pierre Chatelin, Franconville, France, assignor to Valeo, Paris, France

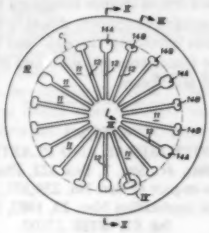
Filed Oct. 14, 1981, Ser. No. 311,249

Claims priority, application France, Oct. 17, 1980, 80 22211

Int. Cl.³ F16F *1/32*

U.S. Cl. 267—161 **8 Claims**

1. A diaphragm spring for a motor vehicle diaphragm clutch, the diaphragm spring comprising a Belleville washer peripheral portion and a central portion divided into radial fingers separated by radial slots, apertures located in the vicinity of the roots or radial outer ends of said radial fingers and alternating therewith, said apertures opening radially into respective radial slots, said apertures comprising intermediate apertures and main apertures, the areas of said intermediate apertures being smaller than the areas of said main apertures, each of said apertures having a radially outer edge lying tangent to a single circumference of said diaphragm spring, said radial fingers and said Bellevelle washer peripheral portion being plain-walled, the circumferential extent of said intermediate apertures being equal to that of said main apertures, and the radial extent of said intermediate apertures being less than that of said main apertures.



4,465,268

VEE BLOCK

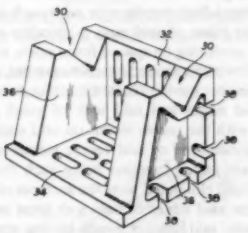
Charles S. Hudson, Birmingham, England, assignor to Atopsy Limited, Birmingham, England

Filed Jul. 2, 1982, Ser. No. 394,854

Claims priority, application United Kingdom, Jul. 17, 1981, 8122204

Int. Cl.³ B25B *11/02*

U.S. Cl. 269—99 **3 Claims**



1. A work holding device for use in marking out, machining and the like, comprising a one-piece unitary hollow box-like steel casting having

(a) a flat rectangular base,

(b) two parallel end walls extending perpendicular to the base along two opposite edges of the base, the edges of such end walls remote from the base having aligned symmetrical Vee recesses but being otherwise parallel to the base,

(c) at least one side wall extending perpendicular to the base along another edge of the base, and

(d) slots formed in the base, in at least one end wall and in at least one side wall for the attachment of clamp means thereto.

4,465,269

PRINTING SUBSTRATE HANDLING, PARTICULARLY SHEET FOLDING APPARATUS

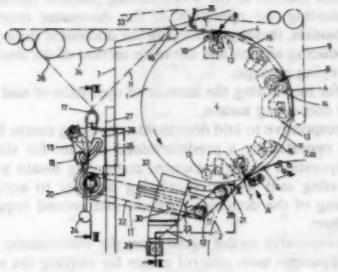
Godber Petersen, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,393

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143243

Int. Cl.³ B42C 1/04

U.S. Cl. 270—47 22 Claims



1. Printed substrate handling apparatus, particularly sheet folding apparatus having

a rotating substrate collection cylinder (2);

collection cylinder gripper means (2*a*) on said collection cylinder for gripping the leading edge (4*a*) of a substrate (4);

a rotating sheet handling cylinder (1) located to form a contact line (A) with the collection cylinder (2);

sheet forming and transfer means (6) forming the substrate at a location behind the gripper means (2) to define a new leading edge (8) of the substrate and form the substrate in a sheet;

sheet gripper means (7) gripping the new leading edge (8) of the sheet for transport of the sheet on the circumference of the sheet handling cylinder,

and comprising, in accordance with the invention

a plurality of sets of rollers (13, 14, 15) located within, and closely adjacent to the circumferential contour of the sheet handling cylinder (1), the sets of rollers being positioned sequentially along the circumference thereof;

an endless conveyer belt (11);

first guide means (12) located outside of said cylinders and guiding a run of the endless conveyer belt, first over a circumferential portion of the collecting cylinder (2) to press the substrate (4) thereagainst, and then into the circumferential outline of the sheet handling cylinder (1) and for engagement with said plurality of sets of rollers (13, 14, 15) as the sheet folding cylinder rotates,

whereby the angle of the conveyer belt (11) with respect to a tangent of the handling cylinder (1) at said contact line (A) will change upon rotation of the sheet handling cylinder;

second guide means (16) located outside of the handling cylinder (1) and guiding removal of the conveyer belt (11) from within the interior of the handling cylinder;

and guide roller means (17, 18, 20) guiding the endless conveyer belt in a closed loop to said first guide roller means (12).

4,465,270

APPARATUS FOR HANDLING SINGLE SHEETS DELIVERED IN SUCCESSION

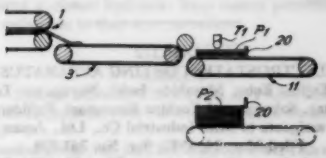
Gloria Amato, Via Roma 135 P, Prato, Firenze, Italy

Filed Aug. 30, 1982, Ser. No. 412,991

Claims priority, application Italy, Sep. 8, 1981, 9510 A/81

Int. Cl.³ B65H 43/04

U.S. Cl. 271—198 4 Claims



1. Apparatus for handling single sheets fed in succession from sheet feed means, said apparatus comprising first conveyor means arranged to receive sheets from the sheet feed means, said first conveyor means being driven independently of the sheet feed means, second conveyor means arranged to receive sheets discharged from the first conveyor means, means mounting the second conveyor means for vertical movement between a raised position in which the second conveyor means is substantially level with the first conveyor means and successive lowered positions in which the second conveyor means permits sheets discharged from the first conveyor means to accumulate in a stack, and means for establishing a drive transmission from the first conveyor means to the second conveyor means when the second conveyor means is in its raised position whereby the second conveyor means is actuated in synchronism with the first conveyor means, said drive transmission being broken in the lowered positions whereby the second conveyor means is stopped during stacking.

4,465,271

ORIGINAL CONVEYING DEVICE FOR A COPYING MACHINE

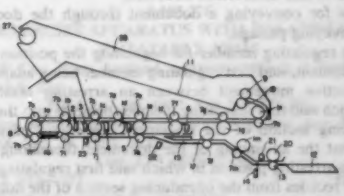
Toshio Saitoh; Susumu Wakatsuki; Heiichiro Kojima, and Noboru Asaka, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,777

Claims priority, application Japan, Dec. 23, 1980, 55-181289

Int. Cl.³ B65H 7/14

U.S. Cl. 271—227 13 Claims



1. An original conveying device comprising:

means for conveying an original from an original inserting position to an exposure position;

original length detecting means provided along an initial conveying path for detecting the length of said original along said path prior to said original being exposed for copying, wherein said original length detecting means is comprised of an original width detector constituted by a plurality of photo-sensors which are arranged on a line perpendicular to the direction of movement of an original,

a plurality of photo-sensors for detecting the presence or absence of an original, and an original front edge detector;

a plurality of conveying structures each having a relatively small path length and which are connectable in series to deliver said original to said exposure position repeatedly a predetermined number of times; and

selection means for selectively connecting said conveying structures in series so that a shortest original circulating path is formed according to the detected length of said original.

4,465,272

ELECTROSTATIC COPYING APPARATUS

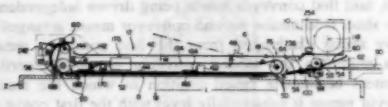
Hiroihi Kajita, Kobe; Masahide Iseki, Neyagawa; Tadanobu Nakajima, Sakurai, and Yoshizo Kawamori, Fujiidera, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Mar. 24, 1982, Ser. No. 361,238

Claims priority, application Japan, Mar. 31, 1981, 56-47874; Mar. 31, 1981, 56-47875

Int. Cl.³ B65H *5/06, 9/06, 29/14*

U.S. Cl. 271—246 **23 Claims**



1. A device for semi-automatically feeding and discharging a document to be copied in an electrostatic copying apparatus of the type including a housing having on top thereof a transparent plate for placing thereon a document to be copied and including main control means for initiating operation of the copying apparatus and generating a signal indicative thereof, said device comprising:

a main frame structure including means mounting said main frame structure for free turning about an axis extending along one side edge of the transparent plate between an operating position in which said main frame structure covers the transparent plate and a non-operating position in which said main frame structure uncovers the transparent plate;

means defining a document conveying passage including a main section between the underside of said main frame structure and the transparent plate when said main frame structure is in the operating position, an introducing section upstream of the main section, a curve discharging section, and a document receiving surface on the upperside of said main frame structure;

means for conveying a document through the document conveying passage;

a first regulating member for regulating the position of the document, said first regulating member being adapted for selective movement between an arresting position in which said first regulating member projects into the introducing section of the document conveying passage to arrest the advancing of the document therealong and a non-arresting position in which said first regulating member recedes from the introducing section of the document conveying passage to permit the advancing of the document therealong;

a second regulating member for regulating the position of the document, said second regulating member being adapted for selective movement between an arresting position in which said second regulating member projects into that part of the main section of the document conveying passage adjacent the downstream end thereof to arrest the advancing of the document and a nonarresting position in which said second regulating member recedes from the last-named part of the main section on the document conveying passage to permit the advancing of the document;

a first document detector for detecting a document at a position upstream of that position in the introducing section of the document conveying passage at which the first regulating member arrests the advancing of the document, said first document detector producing a signal when at least the leading portion of a document is inserted into the introducing section of the document conveying passage, with the leading edge of the document contacting or approaching the first regulating member, to show the completion of the manual positioning of the document;

means responsive to the first document detector signal for bringing said first regulating member from the arresting position thereof to the non-arresting position thereof and for starting the operation of the document conveying mechanism, thereby conveying the document through the introducing section and the main section of the document conveying passage;

means for monitoring the amount of operation of said document conveying means;

means responsive to said document conveying means having been operated by a predetermined amount for stopping the operation of the document conveying means and for activating said second regulating member to arrest advancing of the document beyond said second regulating member;

means responsive to the signal from the electrostatic copying apparatus main control means for moving the second regulating member from the arresting position thereof to the nonarresting position thereof and for re-initiating the operation of the document conveying means, thereby discharging the document through the curved discharging section of the document conveying passage onto the document receiving surface;

first document jamming detecting means operative after said document conveying means has been operated a relatively small predetermined amount subsequent to the initiating of the operation thereof by the first document detector signal and responsive to said first document detector no longer detecting a document because the size in the conveying direction of the document is shorter than a predetermined length or the document is manually withdrawn immediately after the manual positioning thereof, for producing a document jamming signal and for stopping the operation of said document conveying means;

a further detector for generating a signal indicative of the position of said main frame structure; and

means responsive to the presence of a signal from said further detector indicating said main frame structure is in the non-operating position, for making said document conveying means inoperative, and responsive to the combined presence of the document jamming signal and a signal from said further detector indicating said main frame structure is in the operating position, for terminating the document jamming signal when the signal from said further detector changes to indicate said main frame structure is in the non-operating position.

4,465,273

PUNCHING BAG APPARATUS AND SUPPORTING MEANS

Louis Aragona, 11 Scheiber Ter., Cedar Grove, N.J. 07009

Filed Dec. 21, 1982, Ser. No. 451,868

Int. Cl.³ A63B *69/22*

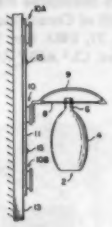
U.S. Cl. 272—78 **12 Claims**

1. Punching bag apparatus and supporting means therefor, comprising:

a punching bag member having a body portion adapted for being struck by a user and a neck portion adapted for engaging a supporting member;

the supporting member including a pair of elongated wire-like members which are twisted at opposite ends so that

said wire-like members are unitary, with the twistings on one end being in spaced relation with the twistings on the opposite end to form a centrally disposed resilient portion for engaging the neck portion of the punching bag member so that said member offers resistance when the body portion thereof is struck by the user and automatically snaps back to the rest portion, said elongated wire-like members having portions extending in opposite directions from the centrally disposed resilient portion;



a bracket;

means for removably mounting the bracket in cantilever-like fashion to a vertical supporting

structure; and

the portions of the supporting member extending in opposite directions from the centrally disposed resilient portion being adapted at their ends for being supported by the bracket.

4,465,274

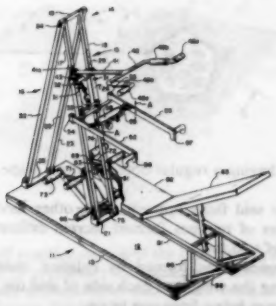
HYDRAULIC EXERCISE DEVICE

Dennis L. Davenport, 10 E. 200 South, American Fork, Utah 84003

Filed Sep. 27, 1982, Ser. No. 424,320

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—130 **13 Claims**



1. A hydraulic exercise device comprising, a load-bearing mast means adapted to be secured to a supporting surface; a head arranged on said mast for axial travel therealong, means for locking said head in place on said mast means and a closed hydraulic loop resistance means arranged therewith that includes a cylinder secured to said head, a piston rod and connected piston for movement against a contained fluid that includes adjustable flow restriction means therewith; handlebar means arranged to be vertically pivotally movable on said head and is connected to said piston rod to translate that vertical movement into piston movement against said contained fluid; and laterally spaced mounting means secured to said head releasably attaching a chest exercise portion for operation by a bodybuilder comprising a pair of outstanding arms arranged to be gripped and moved apart and back together in a generally horizontal plane by a bodybuilder, said arms being connected to respective ends of a piston cylinder assembly comprising a closed hydraulic loop means providing a controlled resistance to that arm movement.

4,465,275

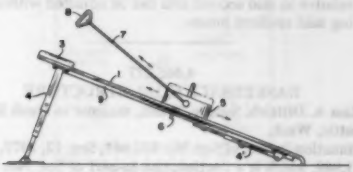
SLIDE BOARD EXERCISE APPARATUS

Everett C. Lingelbach, 6408 7th Ave., North, St. Petersburg, Fla. 33710

Continuation of Ser. No. 335,719, Dec. 30, 1981. This application Sep. 6, 1983, Ser. No. 519,051

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—134 **5 Claims**



1. Exercise apparatus comprising:

(a) a board having a length substantially longer than its width and having a longitudinal groove or slot in the central portion thereof; said board having a pad at one end thereof for a user to sit on;

(b) a supporting means positioned substantially at the padded end of said board and said support means being adapted to maintain the board in a slanted position at an angle of 30°–60° with respect to a horizontal base on which said board is positioned;

(c) a weighted disc positioned on said board and having a pin projecting from the underside of said disc, said pin being positioned in said groove or slot; and

(d) arm means attached to the disc for permitting a force to be applied to the disc, said arm means including two arms which extend from said disc and being pivotable toward the raised end of said board where said arm means is gripped by a user.

4,465,276

EXERCISE APPARATUS WITH RELATIVELY ROTATABLE ARMS

Alan W. Cox, Bray, England, assignor to Black & Decker Inc., Newark, Del.

Filed Apr. 30, 1982, Ser. No. 373,701

Claims priority, application United Kingdom, Apr. 30, 1981, 8113366; Sep. 28, 1981, 8129220

Int. Cl.³ A63B *21/32*

U.S. Cl. 272—137 **12 Claims**

12. Exercise apparatus, comprising:

a first rigid arm having a disc portion rigidly connected to one end thereof;

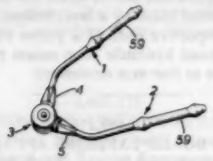
a second rigid arm pivotally connected to said disc portion whereby said first and second arms are pivotal relative to each other about a pivotal axis;

said disc portion having an abutment extending from one side thereof;

a cap overlying said disc portion with said abutment engaged in said cap, said cap being pivotal about said pivotal axis relative to said disc portion and said second arm;

resilient means, disposed in said cap and operative between said abutment and said cap, for resisting relative pivoting between said cap and said disc portion in at least one direction; and

locking means, connected to said second arm, for releasably engaging any one of a series of location means on said cap



for locking said second arm and said cap against relative rotation, release of said locking means enabling said cap to rotate with said first arm relative to said second arm without resistance from said resilient means, whereby the angular position about said pivotal axis of said first arm relative to said second arm can be adjusted without stressing said resilient means.

4,465,277

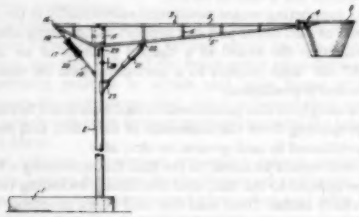
BASKETBALL GOAL STRUCTURE

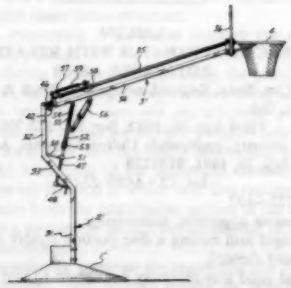
William A. Dittrich, Seattle, Wash., assignor to Dunk King Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 832,661, Sep. 12, 1977, Pat. No. 4,151,989, which is a continuation-in-part of Ser. No. 707,325, Jul. 21, 1976, abandoned. This application Apr. 27, 1979, Ser. No. 33,852

Int. Cl.³ A63B *63/08*

U.S. Cl. 273—1.5 A **6 Claims**





4. In a basketball goal structure including a basketball hoop and means for supporting the hoop in a normal horizontal position, the improvement comprising the supporting means including pivot means mounting the hoop for tilting bodily downward from such horizontal position about a generally horizontal axis located generally behind the hoop by the application of a downward force to the hoop such as the force which may be exerted on the hoop by a player during the execution of a dunk shot for protecting the goal structure from being damaged by force exerted on the hoop during execution of such shot.

4,465,278

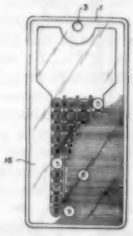
NUMBER SELECTING GAME DEVICE

Samuel V. Messina, 926 Broadhead Rd., and Kevin F. Rose, 14 Eichelberger Dr., both of Coraopolis, Pa. 15108

Filed Jan. 31, 1983, Ser. No. 462,306

Int. Cl.³ A63F *7/04*

U.S. Cl. 273—144 B **3 Claims**



1. A device for randomly selecting a number having a plurality of digits, comprising a casing of transparent plastic material of a given color and including a reservoir and chute terminating in a plurality of parallel vertical columns formed by partitions in said device, a plurality of balls in said casing, most of said balls being of the same color of said given color so as not to be readily visible, the remaining balls being of a different color that is visible from the exterior of said casing.

4,465,279

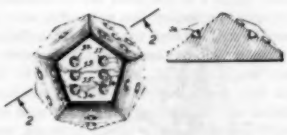
REGULAR DODECAHEDRON DIE WITH OPPOSITE FACES HAVING IDENTICAL NUMBERS OF INDICIA

Roland E. Larson, 122 W. 35th St., Erie, Pa. 16508

Continuation-in-part of Ser. No. 930,417, Aug. 2, 1978, abandoned. This application Jan. 28, 1982, Ser. No. 343,585

Int. Cl.³ A63F *9/04*

U.S. Cl. 273—146 **1 Claim**



1. A die having a regular dodecahedron shape with twelve flat faces,

each two said faces opposite each other having identical numbers of recesses formed therein different from any other of said faces,

said recesses being formed by deleting material thereby reducing the weight of each side of said die,

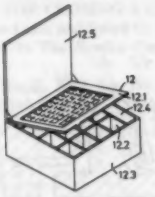
said recesses being from one to six,

all of said recesses being of equal size and shape,

said recesses making up the indicia on each two opposite sides being equal in number whereby the center of mass of the die coincides with the geometrical center of the die resulting in a probability that is truely one sixth, and the center of mass of the die is half way between any two parallel sides of the die,

said recesses on the respective sides of said die are arranged in generally the same relation to the patterns on the conventional cube shaped die.

4,465,280
MAZE BOARD GAME
Dan Dimitriu, 2228 Sixth Ave., Fargo, N. Dak. 58103
Filed Feb. 1, 1983, Ser. No. 462,876
Int. Cl.³ A63F 9/14
U.S. Cl. 273—153 R 8 Claims



1. A board game in which a player attempts to move a marker through a maze, comprising

a board;

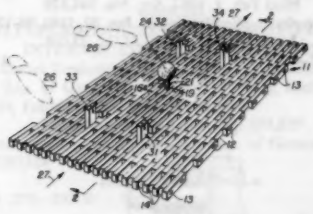
means defining a plurality of individual pieces placeable on the board, at least a portion of which pieces have an upper surface provided with one or more grooves and cooperating, when placed on the board, to define a grooved maze path extending across at least a portion of the board;

marker pieces having portions slideable in such grooves;

the individual pieces and marker pieces including cooperative retaining means preventing marker pieces from being lifted from the grooves;

gate means carried by at least some of the pieces of said portion across their respective grooves and pivotable in one direction to enable or block the movement of markers in such grooves, and means preventing observation of the pivoting direction of the gate means.

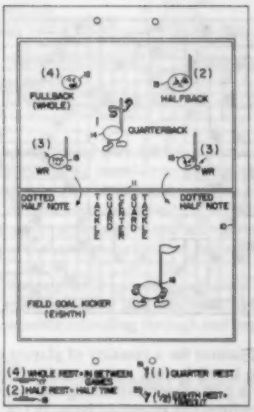
4,465,281
GOLF PRACTICE MAT
Robert L. Whitfield, 50 W. 27th Ave., San Mateo, Calif. 94403
Filed Jul. 14, 1982, Ser. No. 398,232
Int. Cl.³ A63B 69/36
U.S. Cl. 273—186 R 4 Claims

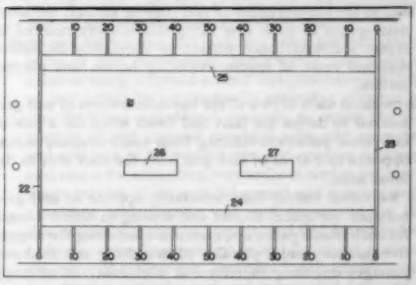


1. In a golf practice device of the type having a rectangular mat formed of a plurality of rectangular blocks of approximately square cross-section, said blocks being arranged in a plurality of rows, the blocks in each row having their longer dimensions extending longitudinally of said mat, the ends of said adjacent blocks in each row being spaced apart a distance less than the length of said blocks, the blocks in adjacent rows being staggered relative to each other so that at least one side of each block in each row has an overlap area opposed to a corresponding overlap area of a side of a block in an adjacent row, and a plurality of parallel wires extending transversely of said mat and through holes in the overlap areas of one block in each of said rows, said wires retaining said blocks in assembled position,

the improvement comprising at least a first said block being formed with a slit in a first end of said first said block extending inward from said first end of said first said block in the plane of said wires and extending inward to one said wire whereby said first block is disengaged from said one said wire and can be pivotted about another said wire extending through a second end of said first said block to an upright position above the plane of the top of said mat.

4,465,282
MUSICAL SYMBOL EDUCATIONAL GAME
Patty M. Dillon, 521 Delta St., Denver, Colo. 80221
Filed Mar. 12, 1982, Ser. No. 357,596
Int. Cl.³ A63F 3/00
U.S. Cl. 273—247 5 Claims





1. A game to be played by two opposing teams of students for use as a tool for facilitating the education of elementary pupils in learning the basic symbols and notations used in music which comprises:

a pregame instruction chart bearing the durational symbols of musical notation, each equated on a time beat basis to a respective term used in the game of football,

a game board bearing the representation of a football field with ten-yard lines and goal lines,

a respective playing piece representing each team for positioning on said board to indicate the position of the team on the playing field; and

a set of flash cards, each bearing a single musical symbol on

one side and a corresponding identification of the symbol on its other side, whereby the movement of the respective teams playing pieces may be governed by an individual player on each team taken in turn and dependent upon his recognizing or not recognizing a flash card exhibited to such player at his turn,

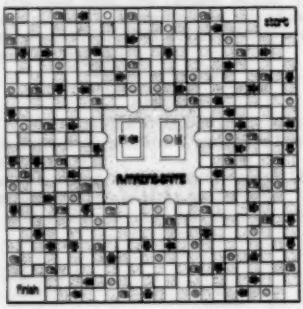
wherein said identification on said other side of at least some of said flash cards is a football term corresponding to said symbol on said one side.

4,465,283

MAZE TYPE GAME BOARD WITH ALTERNATELY COLORED SPACES

Deborah L. Pilette, 19700 Greenwald Dr., Southfield, Mich. 48075, and Paula D. Romund, 26266 Evelyn Ct., Franklin, Mich. 48025

Filed May 17, 1982, Ser. No. 378,822
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—249 **1 Claim**



1. A game apparatus for a plurality of players comprising,

(a) a playing board having a rectangular playing surface defined by a grid comprising contiguous parallel rows of spaces of uniform size extending laterally toward the sides of the playing surface, and said rows being of sufficient number to provide columns of spaces extending to the top and to the bottom edges of said playing surface, the alternate spaces of each row being distinctively colored to create a checkerboard pattern of alternately distinctive diagonal rows of spaces extending across said playing surface,

(b) means at each of two of the opposite corners of said grid marked to define the start and finish areas for a pair of individual pathways running from space-to-space across opposite side areas of said grid from the start area to the finish area,

(c) individual barrier lines arbitrarily applied to said grid between the spaces thereof and serving to define a maze for each of said pathways, each maze including the respective pathway and a plurality of branching and dead-end passages deviating therefrom at a plurality of arbitrary locations between the respective start and finish area,

(d) means defining a rectangular closed area in the center of said grid barred from said rows and columns of spaces except for a pair of openings on each side leading to a contiguous row or column of spaces and communicating with the next adjacent one of said pathways,

(e) separately identified and individual means in said closed area for directing favorable and unfavorable play actions,

(f) randomly distributed indicia in said pathways designating favorable and unfavorable play action means to be taken by a player from the said closed area,

(g) a plurality of individual playing pieces each movable from space-to-space to designate a respective player's position on said grid, and

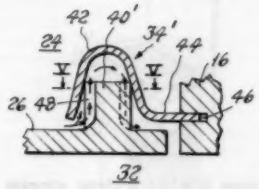
(h) chance means for determining the number of spaces over which a player may move his playing piece in attempting to advance the playing piece from the start area to the finish area.

4,465,284

SCALLOPED COOLING OF GAS TURBINE TRANSITION PIECE FRAME

Li-Chieh Szema, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,565
Int. Cl.³ F16J *15/16, 15/44*; F01D *5/08*
U.S. Cl. 277—22 **18 Claims**



1. A seal for sealing a combustor transition piece to an adjacent structure for limiting a leakage flow of compressed air therepast comprising:

at least one flange on said transition piece;

a seal member;

first means on said seal member for sealingly engaging a surface on said flange;

second means on said seal member for sealingly engaging said adjacent structure; and

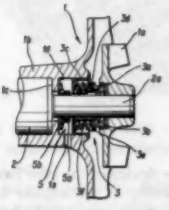
a plurality of flow channels in at least one of facing surfaces of said flange and said first means, said plurality of flow channels being effective for permitting a controlled flow of said compressed air to flow in contact with said facing surface of said flange whereby said flange is cooled.

4,465,285

VARIABLE CONTACT CENTRIFUGALLY OPERATED SEAL MECHANISM

Hiroaki Toyoda, Anjo; Minoru Kinbara, Toyota, and Akira Nakai, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 1, 1982, Ser. No. 344,529
Claims priority, application Japan, Jan. 30, 1981, 56-12622[U]
Int. Cl.³ F16J *15/32, 15/38, 15/54*
U.S. Cl. 277—25 **4 Claims**



1. A variable contact seal mechanism comprising:

a rotatable shaft;

a seal body having a wall member which includes a side surface disposed substantially transverse to the longitudinal axis of said shaft; and

a seal member which further comprises a cylindrical portion secured onto said rotatable shaft and having a metallic

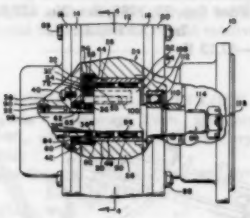
central core member disposed therein for strengthening said seal member, a tongue portion extending exclusively from an axial end portion of said cylindrical portion with a prescribed angle of inclination and resiliently, slidably, and continuously contacting said side surface of said seal wall such that resilient contact force of said tongue portion with said wall decreases in response to an increase in rotational speed of said shaft, and means for maintaining said tongue portion in continuous contact with said wall both when said shaft is rotating and not rotating.

4,465,286

SEAL FOR CLOSING A CAVITY

Brian C. Deem, Avon Lake, and Ralph G. Eslinger, Elyria, both of Ohio, assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 22, 1983, Ser. No. 468,092
Int. Cl.³ F16J 15/16
U.S. Cl. 277—81 P **18 Claims**



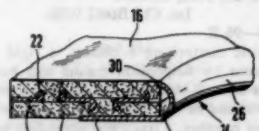
1. A seal assembly for closing a cavity located between a rotor, a stationary end member, and a crankshaft to retain a lubricant therein, said seal assembly being characterized by a disc having an eccentric opening therein, a first flange surrounding said opening and a second flange surrounding the peripheral surface of the disc, a first resilient member retained by said first flange, and a second resilient member retained by said second flange, said first resilient member engaging said stationary end member and said second resilient member engaging said rotor to allow said disc to rotate with said rotor in response to an input from said crankshaft, said first and second resilient members rotating at a fractional ratio of the rotation of said crankshaft to reduce centrifugal loading and thereby effectively seal said cavity.

4,465,287

CYLINDER-HEAD GASKET FOR PISTON-TYPE INTERNAL COMBUSTION ENGINES

Rudolf Bindel, Grafenberg, and Wilhelm Kullen, Hülben, both of Fed. Rep. of Germany, assignors to Elring Dichtungswerke GmbH, Fellbach, Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,529
Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217329
Int. Cl.³ F16J 15/12
U.S. Cl. 277—235 B **7 Claims**



1. A cylinder-head gasket defining a sealing plane, comprising in combination

at least a soft sheet of material made of a highly elastic layer of graphite, and formed with an opening serving as a fuel chamber passage,

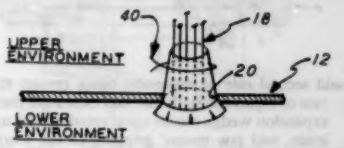
a sheet metal collar clamp extending along a rim of said layer bordering said opening, and including a single flange extending for the greater part thereof parallel to said sealing plane, and terminating near an edge of said rim facing away from said sealing plane.

4,465,288

SEALING APPARATUS INCLUDING PLIABLE CABLE WRAPPING WITH UPPER AND LOWER SEAL MEANS

Robert M. Kofoed, Sr., 10 Oldfield Pl., Red Bank, N.J. 07701

Continuation-in-part of Ser. No. 430,785, Sep. 30, 1982, abandoned. This application Jun. 16, 1983, Ser. No. 504,682
Int. Cl.³ F16J 15/02; A62C 7/00
U.S. Cl. 277—237 R **11 Claims**



1. Sealing apparatus for surrounding a portion of a generally longitudinally extending member extending through and beyond an opening formed in a member and for providing a seal between the environment on one side of said member and the environment on the other side of said member, said opening of a predetermined shape and provided by a member surface, comprising:

a body of pliable predetermined material for being wrapped around said portion of said generally longitudinally extending member extending through and beyond said opening;

a drawstring;

an expansion ring complementary in shape to said predetermined shape;

said material provided with a passageway extending along the lower portion thereof for receiving said ring and provided with a plurality of holes along the upper portion thereof for receiving said drawstring; and

upon said drawstring and said ring being inserted into said holes in said passageway, respectively, and upon said material being wrapped around said predetermined length of said generally longitudinally extending member, said ring for being compressed inwardly to permit the lower portion of said material provided with said passageway and said ring to be inserted into said opening whereupon said ring is for expanding outwardly to wedge and seal the lower portion of the material against said member surface providing said opening, and said drawstring for being drawn tightly against and tied around said generally longitudinally extending member to seal the upper portion of the material against said generally longitudinally extending member whereby said seal is provided between said environments.

4,465,289

CHUCK

William Banks, 1304 Pinehill Rd., Bettendorf, Iowa 52722

Filed Jul. 13, 1981, Ser. No. 282,784
Int. Cl.³ B23B 31/16, 31/14
U.S. Cl. 279—121 **9 Claims**

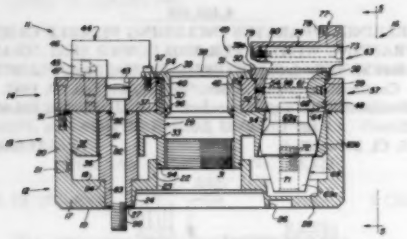
1. A chuck, for coupling to a draw tube and holding and rotating a workpiece, comprising:

body means;

expansion plate means, joined to said body means, having a first rate of expansion upon rotation;

expansion wedge means, coupled to the draw tube and disposed between said body and expansion plate means, having a second rate of expansion upon rotation;

jaw means rockably mounted in said expansion plate means, engaged by said expansion wedge means, and rockable, upon actuation of said expansion wedge means by the draw tube, to grip the workpiece; and



said second rate of expansion being greater than said first rate of expansion such that said expansion plate means and expansion wedge means upon rotation take up centrifugal loads, said jaw means' gripping of the workpiece being maintained thereby.

4,465,290

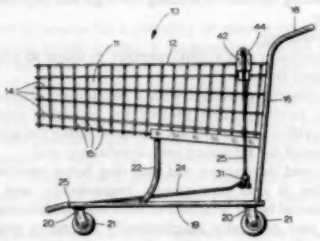
SHOPPING CART WITH LOWER TRAY SIGNALLING DEVICE

Charles M. Hooley, 920 S. Greeley St., Stillwater, Minn. 55082

Filed Apr. 5, 1982, Ser. No. 365,180

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—33.99 A **10 Claims**



1. A shopping cart comprising:

a frame;

an upper basket secured to and supported by said frame;

a lower tray positioned below said basket and being pivotally secured near one end to said frame to permit pivotal movement of said lower tray between a first or upper position and a second or lower position; and

signalling means for indicating the presence of a load on said lower tray including:

a first elongated rigid member being hollow and having its lower end directly connected with said lower tray at a point spaced from the point at which said lower tray is pivotally secured to said frame and being movable with said lower tray between a first position corresponding to the first position of said lower tray and a second position corresponding to the second position of said lower tray;

a second member secured to a portion of said upper basket or frame and having a portion slideably connected with the upper end of said first elongated rigid member, one of said first elongated rigid member and said second member including a signal portion for indicating the presence of a load on said lower tray when exposed and the other of said first elongated rigid member and said second member including means for covering said signal portion when said first elongated rigid member is in its first position and exposing said signal portion when said first elongated rigid member is in its second position, said second member further including a second elongated rigid member extending within said first elongated rigid member;

means for maintaining said lower tray in its first position in the absence of a load and for permitting movement of said lower tray to said second position when a load is placed on said lower tray including a spring disposed within said first elongated rigid member and extending between the lower end of said second elongated member and a portion of said first elongated rigid member.

4,465,291

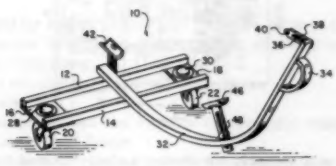
BOAT LAUNCHING DOLLY

Earvin T. Wylie, and Ruth E. Wylie, both of 4644 Calle de Casitas, Oceanside, Calif. 92056

Filed Sep. 23, 1982, Ser. No. 422,033

Int. Cl.³ B62B *1//12*

U.S. Cl. 280—47.13 B **8 Claims**



1. A steerable dolly for supporting the bow of a boat for transport over a surface comprising:

an elongated rectangular horizontally extending support frame;

a pair of laterally spaced caster wheels secured beneath opposite ends of said frame;

a V-shaped bow support bracket mounted centrally of said frame for engaging the V-shaped bow of a boat or support of same;

an elongated central forwardly extending frame member having an inner end and an outer end and secured at the inner end to said support frame, and

an attachment bracket mounted at the outer end of said central frame member for pinned attachment to a prow eye.

4,465,292

STEERING OF VEHICLES

Timothy S. Fry, Dunchurch, and Graham C. Cole, Coventry, both of England, assignors to GKN Group Services Limited, Smethwick, Warley, England

Filed Jun. 8, 1982, Ser. No. 386,287

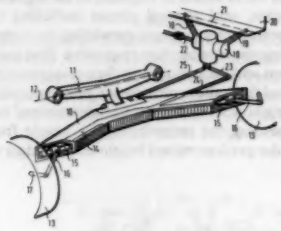
Claims priority, application United Kingdom, Jun. 11, 1981, 8117999; Feb. 23, 1982, 8205294

Int. Cl.³ B60G *9/00*

U.S. Cl. 280—95 R **8 Claims**

1. A vehicle comprising a chassis, a rigid axle mounted relative thereto by suspension means and having steerable wheels at its ends, a steering control means mounted on the vehicle chassis and having a driver controllable input member and an output member, a track rod extending generally longitudinally of the axle and interconnecting the steerable wheels for controlling the relative steered positions thereof, a link extending generally transversely of the vehicle and pivotally connected to said output member of the steering control means and to the track rod in the central region thereof, wherein the steering control means is mounted on the chassis of the vehicle

for angular movement about an axis lying generally fore and aft of the vehicle, with its output member spaced from such axis, and a compensating link extending substantially parallel to said link and connected to the steering control means and axle



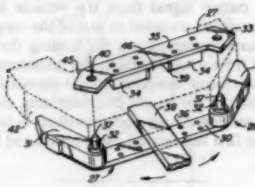
so that when relative movement between the axle and chassis occurs the steering control means is moved angularly about said axis in a sense such that no steering movement of the wheels is produced in consequence of said relative movement.

4,465,293

VEHICLE OSCILLATION LOCK

William S. McNab, Chattanooga, Tenn., and Jerry A. Phifer, Peachland, N.C., assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Oct. 28, 1982, Ser. No. 437,497
Int. Cl.³ B60D *1/14*
U.S. Cl. 280—474 **7 Claims**



1. In a front-end loading vehicle having a front frame articularly connected to a rear frame by an elongated pivot link mounted to pivot about a generally vertical axis at its one end, the improvement which comprises: a laterally-extending mounting plate affixed to one of said frames facing the other of said frames and extending in cross-wise juxtaposition to the pivot link, a laterally-extending lock plate having means for selective engagement with said mounting plate in parallel orientation with said mounting plate, a pair of spaced stop blocks attached to said lock plate to extend between said mounting plate and said lock plate in assembled position with said elongated pivot link extending between the spaced stop blocks, said pivot link and stop blocks being sized to abut against longitudinally-extending surfaces of said elongated pivot link to restrict oscillatory movement of one frame with respect to the other frame about the longitudinal axis of said pivot link.

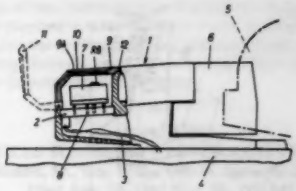
4,465,294

SAFETY SKI BINDING

Engiebert Spitaler, W. Neudorf; Gerhard Oberleitner, and Theodor Nitschko, both of Vienna, all of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Feb. 2, 1982, Ser. No. 345,109
Claims priority, application Austria, Feb. 13, 1981, 685/81
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—612 **4 Claims**

1. In a safety ski binding which includes electrically actuated release means for releasably holding a ski shoe, sensor means for producing first and second electrical signals in response to respective forces urging movement of said ski shoe relative to said binding in respective directions which are approximately perpendicular to each other, and an electrical circuit having evaluating means responsive to said first and second electrical signals from said sensor means for controlling said release means, said evaluating means including two integrators which each have as an input a respective one of said first and second electrical signals, a summing amplifier which is connected to an output of each of said integrators, a first group of circuit components which are coupled to and define a switching threshold for a threshold switch which is connected to an output of said summing amplifier and which controls said



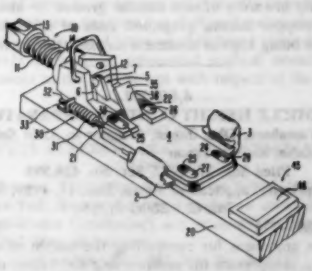
release means, and a second group of circuit components which are coupled to and define time constants for said integrators and said summing amplifier, said first and second groups of circuit components being selected in dependence on selected physical characteristics of a particular skier using said binding, the improvement comprising wherein said binding includes a mounting which is electrically connected to said electrical circuit and is adapted to removably receive and to be electrically coupled to a plug-in unit, wherein said plug-in unit has thereon a portion of said electrical circuit, said portion including said first and second groups of circuit components, and wherein said circuit components of said second group are fixed in value and said circuit components of said first group are adjustable in value.

4,465,295

DYNAMIC SKI BOOT POSITIONING APPARATUS

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 230,530, Feb. 2, 1981, abandoned. This application Jan. 19, 1984, Ser. No. 572,127
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—612 **21 Claims**



1. A ski binding for releasably securing a ski boot to a ski and being responsive to a movement of a skier for moving said ski boot relative to said ski a predetermined distance in a predetermined direction, the binding comprising means for providing a signal corresponding to the magnitude of forward, rearward and lateral leaning movements of said skier, and means responsive to the signal for moving the ski boot a proportional amount forwardly and rearwardly relative to the ski in response to the forward and rearward leaning movements of the

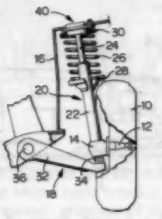
skier and from side-to-side relative to the ski in response to the lateral leaning movements of the skier.

4,465,296

UPPER SUPPORT IN VEHICLE SUSPENSION SYSTEMS

Harunori Shiratori, Toyota, and Yoshikazu Tsukamoto, Inuyama, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Tokai Rubber Industries, Ltd., both of Aichi, Japan

Filed Mar. 17, 1982, Ser. No. 359,105
Claims priority, application Japan, Oct. 31, 1981, 56-174838
Int. Cl.³ B60G *11/14*
U.S. Cl. 280—668 **7 Claims**



1. An upper support for use in a wheel suspension system of a vehicle having a shock absorber which includes a piston rod, said upper support comprising:

a cylindrical inner member connected to one end of the piston rod of the shock absorber;

an outer member disposed concentrically with, and radially outwardly of, said inner member with a predetermined distance of radial spacing therebetween, said outer member being fixed to the vehicle body;

an annular, cylindrical resilient member interposed between said inner and outer members; and

stopper means, provided on at least one axial end side of the resilient member, for limiting an axial deformation of said resilient member, said resilient member having, in an axial end portion thereof on said at least one axial end side, an annular groove formed substantially continuously and concentrically with said inner member and having a predetermined depth, said resilient member further having a plurality of bosses which are angularly spaced along said annular groove and which are axially projected from an annular abutment portion of the resilient member located radially inwardly of said annular groove for abutment on said stopper means, projected ends of said plurality of bosses being kept in abutment on said stopper means.

4,465,297

VEHICLE HEIGHT CONTROL APPARATUS

Shinichi Yamahara, Obu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 27, 1982, Ser. No. 424,593
Claims priority, application Japan, Dec. 17, 1981, 56-202531
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 **11 Claims**

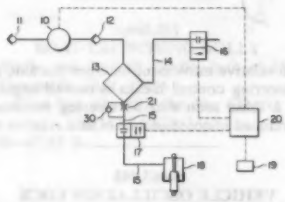
1. In an apparatus for controlling the height of a vehicle including a compressor for compressing air; a drier communicated with the compressor for drying the compressed air and pneumatically springed shock absorbers communicated with the drier via valve means, said shock absorbers being adapted to change the height of the vehicle by introducing and discharging the compressed air in and from the shock absorbers, a controlling apparatus including:

(a) first valve means disposed in an exhaust passage communicating the drier with the atmosphere for opening and closing the exhaust passage;

(b) second valve means disposed in a passage communicating the absorbers with the drier for opening and closing the passage;

(c) sensor means for detecting the height of the vehicle;

(d) a control circuit connected to the output of the sensor means for selectively operating the compressor, the first and second valve means in response to the signals from the sensor means, said control circuit including a vehicle height discriminating circuit providing an output signal for opening or closing the respective first and second valve means and for controlling the compressor in relation to the signal from the sensor means relating to the relative vehicle height with respect to a predetermined height and a circuit sensing the recovery of the height from a low height to the predetermined height to provide a signal for



opening the first valve means for a predetermined period of time; and,

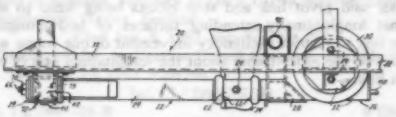
(e) the control circuit comprising the height discriminating circuit having a plurality of output terminals providing different combinations of logic state signals depending upon the output signal from the vehicle height sensor means, the circuit, coupled to one of the output terminals of the discriminating circuit, for sensing the recovery of the height from a low height to the predetermined height; and a logic circuit receiving output signals from the output terminals of the height discriminating circuit and the recovery sensing circuit and providing output signals to control the first and second valve means and the compressor.

4,465,298

U-JOINT MOUNT AND LATERAL GUIDE FOR AIR SPRING SUSPENSION

John E. Raidel, Sr., Rte. 9, Box 400-M, Springfield, Mo. 65804

Continuation-in-part of Ser. No. 341,474, Jan. 21, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 431,755
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—711 **27 Claims**



1. A suspension system for supporting the chassis of a vehicle from at least one axle comprising a torque beam having a medial portion adapted to mount to the axle, a downwardly depending member, and a rearwardly extending spring platform, a spring means mounted to said platform at the rear of the beam and rearwardly of the axle, and adapted to mount to the chassis, and means to mount the other end of said torque

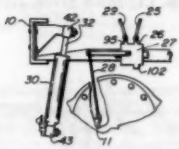
beam to the chassis, said beam mounting means including a universal joint having means to permit limited pivoting of said beam thereabout in a longitudinal plane, and rotation of said beam about its longitudinal axis to minimize torsional forces therein as the axle moves with respect to the chassis.

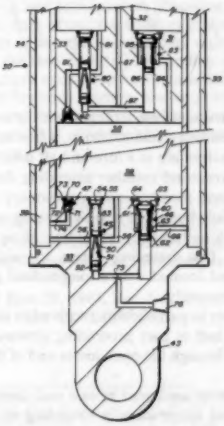
4,465,299

VEHICLE SUSPENSION WITH LOAD-CONTROLLED DAMPING AND LOAD-CONTROLLED DAMPER

Thomas R. Stone, Hayward, and Roger P. Penzotti, Livermore, both of Calif., assignors to Paccar Inc., Bellevue, Wash.

Filed Nov. 30, 1982, Ser. No. 445,724
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—714 **51 Claims**





1. A vehicle suspension system with load-controlled damping, including in combination:

a vehicle having wheel-supported axles and a frame with an interposed spring-suspension system between said axles and said frame,

load-controlled damper means between said axles and said frame, said damper comprising

a cylinder assembly having an upper closed end and a lower closed end and comprising an outer cylinder and an inner cylinder inside said outer cylinder with an annular space between them, said lower end being mounted to a said axle,

a piston in said inner cylinder with a piston rod extending through said upper end and secured at its upper end to said frame,

said inner cylinder being filled with hydraulic fluid both above and below said piston, said annular space being filled with the same fluid except for an air space at the top,

jounce-responsive metering means in said assembly for removing said fluid in metered amount from below said piston and supplying a like amount of fluid above said piston upon downward movement of said piston,

high-speed-jounce-responsive blow-off means in said assembly for removing said fluid in larger amount from below said piston and supplying a like amount of said fluid above said piston upon high-velocity downward movement of said piston,

rebound-responsive metering means in said assembly for removing fluid in metered amounts from above said piston and supplying a like amount of said fluid below said piston upon upward movement of said piston,

high-speed-rebound-responsive blow-off means in said assembly for removing additional fluid from above said piston and supplying a like amount below said piston upon high-velocity upward movement of said piston,

load responsive means connected to a said axle and to said frame for providing a change in pressure upon a change in load, and

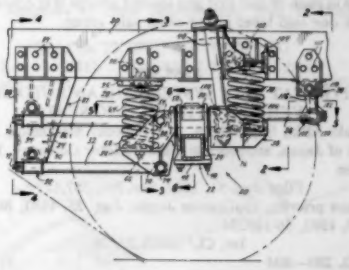
passage means transmitting said pressure change from said load-responsive means to each of said metering means for varying the resistance of said metering means to said fluid passing through it and to each of said blow-off means to vary its actuating conditions.

4,465,300

VEHICLE SUSPENSION FOR ROUGH TERRAIN

John E. Raidel, Sr., Rte. 1, Box 400-M, Springfield, Mo. 65804

Filed Aug. 19, 1982, Ser. No. 409,547
Int. Cl.³ B60G *9/02*
U.S. Cl. 280—725 **19 Claims**



1. A suspension assembly for supporting a truck type vehicle chassis from at least one axle comprising an axle seat secured to said axle, a trunnion shaft and spring mount assembly rotatably mounted to said axle seat, a spring means extending between the said trunnion shaft and spring mount assembly and the chassis, and at least one torque rod pivotally connected to and extending between the trunnion shaft and spring mount assembly and the chassis, said trunnion shaft being aligned transverse to the axle to maintain substantial vertical linearity of said spring means as the axle moves with respect to the chassis.

4,465,301

SAFETY STEERING COLUMN ASSEMBLY FOR AUTOMOBILES

Bernd Bongers, Kirchheim, and Konrad Brand, Höhenkirchen, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,357
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045141
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—777 **4 Claims**

1. A safety steering column assembly for automotive vehicles, arranged to shorten under the effect of a predetermined force exerted during an impact accident, comprising an axially extending steering column, a safety sleeve forming a part of and extending in the axial direction of said steering column, said safety sleeve is a grid tube, wherein the improvement

comprises that said grid tube is formed separately from and is coaxially connected to said steering column, said guide tube comprises a member formed of fiber reinforced plastics material made up of separate grid strands each formed of a plurality of plastics material impregnated fiber strands with each of said grid strands located outwardly from and extending angularly of and wound around the axis of said steering column, said grid strands including a first group and a second group of separate and individual said grid strands with said grid strands of said

first group extending angularly across said grid strands of said second group and disposed in contact therewith, each said grid strand comprises a plurality of said fiber strands arranged in separate superposed layers and at the intersecting locations of said grid strands of said first and second groups said superposed layers of fiber strands of said first and second groups are disposed in alternating and interleaved relation relative to the axis of said steering column so that each said layer of fiber strands in each of said first and second groups is in contact with at least one said layer in the other said group.

4,465,302

PASSIVE SEAT BELT SYSTEM FOR AN AUTOMOTIVE VEHICLE WITH TILTING SEATS

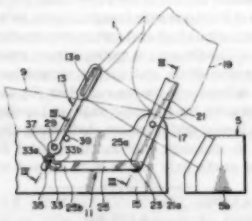
Hiroyuki Miki, Sagamihara, and Hideoki Matsuoka, Isehara, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 11, 1982, Ser. No. 387,427

Claims priority, application Japan, Jun. 23, 1981, 56-95906; Jul. 15, 1981, 56-109254

Int. Cl.³ B60R *21/08*

U.S. Cl. 280—804 **11 Claims**



1. A passive seat belt system for an automotive vehicle with a seat with a reclining seat back, comprising:

(a) a seat belt, one end of which is supported on or near a vehicle door;

(b) a seat belt retractor located at the opposite side of the seat from the door for anchoring the other end of said seat belt and applying a retracting force on said seat belt;

(c) a guide arm pivotably supported on the side of the seat cushion near said retractor, one end of said guide arm having a slot through which said seat belt passes; and

(d) a positioning mechanism coupling said guide arm to the seat back of the seat to tilt said guide arm in conjunction with the seat back as the seat back is tilted in the range of travel forward of its normal, upright position, said positioning mechanism holding said guide arm in its original position, corresponding to the normal, upright position of the seat, when the seat back is tilted in the range of travel rearward of its normal, upright position.

4,465,303

SEAT BELT ARRANGEMENT FOR AUTOMOTIVE VEHICLE

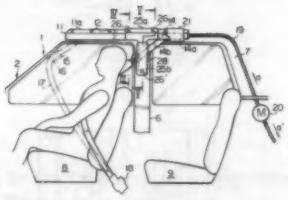
Hiroyuki Miki, Sagamihara, and Hiroo Okuyama, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Sep. 28, 1982, Ser. No. 426,171

Claims priority, application Japan, Oct. 12, 1981, 56-160973

Int. Cl.³ B60R *21/02, 21/10*

U.S. Cl. 280—804 **5 Claims**



1. A protective seat belt arrangement for use in an automotive vehicle including a seat structure, a first structural member longitudinally extending in a fore-and-aft direction of the vehicle, a second structural member extending downwardly from the first structural member, and a stationary member fixedly held in the vehicle body, the seat belt arrangement comprising

a guide rail longitudinally extending along and fixedly attached by first fastening means to said first structural member and formed with a longitudinal groove which is open downwardly;

a slide member in part slidably received in the groove in said guide rail and in part protruding downwardly from the guide rail through the open lower end of the groove in the guide rail;

a retaining strap anchored at one end thereof to said slide member and longitudinally extending in part in front of the seat back of said seat structure;

a retractor unit secured to said stationary member and adapted to pull the retaining strap and to have the retaining strap wound into roll form therein, said retaining strap being anchored at the other end thereof to the retractor unit;

drive means operable for driving the slide member to move forwardly and rearwardly through the groove in said guide rail; and

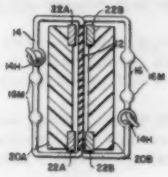
a strap guide member having an upper bracket portion fixedly attached to said first structural member by second fastening means with a portion of said guide rail closely held between the bracket portion and the first structural member and a lower strip portion extending downwardly from the upper bracket portion along said second structural member and fixedly attached to the second structural member, the arm portion of the slide member extending through a gap formed between the second structural member and the lower strip portion of the strap guide member the upper bracket portion of the strap guid member upwardly terminating below the upper end of said first structural member, said second fastening means having not only said strap guide member but also said guide rail secured to said first structural member.

4,465,304

METHOD AND ARTICLE FOR PROTECTING SKIS

Lewis O. Hicks, 13851 Triadelphia Mill Rd., Clarksville, Md. 21029

Filed Mar. 17, 1982, Ser. No. 358,869
Int. Cl.³ A63C 11/02
U.S. Cl. 280—814 20 Claims



12. An article for protecting skis comprising:

(a) an elongate flat body portion being made of a solid cross-section of resilient material, having two long edges, two short edges, and two parallel oppositely facing flat surfaces; and

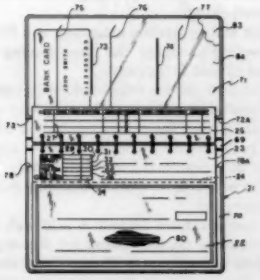
(b) a plurality of straps for securing said body portion to a pair of skis with said body portion in between the bottoms of the skis and each of said flat surfaces in contact with the bottom of one of the skis substantially completely along the length of the skis, said straps extending out from both of said long edges, each strap having a width less than the length of said flat body portion, and each strap including a securing means to secure it to another of said straps, and wherein said article is rollable along said flat body portion for easy storage.

4,465,305

CHECKBOOK, CHECKS, AND CHECK STUBS

John L. Bateman, Cockeysville, and Stanley J. Mitchell, Belair, both of Md., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,143
Int. Cl.³ B42D 3/00
U.S. Cl. 281—31 1 Claim



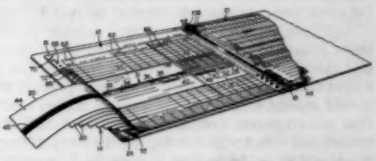
1. Apparatus for checking accounts comprising a plurality of pages bound together, each of said pages being divided into a stub adjacent to said page binding and a check detachably secured thereto by means of a score line, printing on the back of said stub providing areas for entering data that is not related to the check that is attached thereto, and printing on the front of said stub providing areas for entering data related to the check attached thereto and data related to data on the back of the adjacent next preceding stub in said plurality of pages in which the total of said deductions may be entered to be subtracted from the balance brought forward, further comprising a substantially rectangular checkbook cover, a piece of transparent material joined along its edge to the full length of one of the edges of said cover and joined to less than half the length of both of two transversely disposed and parallel edges of said cover beginning at the point at which said parallel edges meet said one edge, thus forming a first pocket, a piece of opaque material joined along its edge to the full length of the edge opposite to said one edge of said cover and joined to less than half the length of both parallel edges of said cover beginning at the point at which said parallel edges meet said edge opposite to said one edge of said cover thus forming another pocket, a second piece of transparent material covering said piece of opaque material and joined to said cover along the same edges as said piece of opaque material and joined to said piece of opaque material along an edge opposite the edge which joins said two parallel edges thereof and also joined to said piece of opaque material along two thin lines that correspond to said parallel edges of said cover, said second piece of transparent material having three slits therein each running parallel to and spaced from said thin lines, each slit being slightly wider than the width of a standard credit card, thus forming three individual pockets, and means to join said bound pages of checks and check stubs to said cover along the width-wise midline of said cover.

4,465,306

COMBINATION CHECKWRITING AND BOOKKEEPING ASSEMBLY AND METHOD OF USING SAME

Robert W. Hincks, and Daniel A. Hincks, both of Farmington, Conn., assignors to Data Management, Inc., Farmington, Conn.

Filed Feb. 22, 1982, Ser. No. 351,223
Int. Cl.³ B41L 3/00; B42B 5/00; B42C 1/00
U.S. Cl. 282—29 B 17 Claims



1. In a one-write bookkeeping and check writing system adapted to record payroll and other information, the combination comprising:

A. a bank of shingled commercial checks each having a body portion and a detachable payroll voucher stub portion at one side thereof and a front surface and a back surface, each of said checks having a discrete area on the front surface of said body portion thereof for entry of at least the name of the payee and the amount of the check and at least a corresponding discrete area of an indicia transfer coating on its back surface, each of said voucher stub portions having a discrete area on said front surface for entry of employee earnings data and at least a corresponding discrete area of an indicia transfer coating on said back surface;

B. a disbursement and payroll journal sheet underlying said bank of checks and having length and width dimensions, the width dimension being divided into a multiplicity of columns and the length dimension being divided into a multiplicity of lines, said journal sheet having a first portion of said columns dimensioned and configured cooperatively with said commercial checks to record at least the name of the payee and the amount entered on the check, said journal sheet having a second portion of said columns dimensioned and configured cooperatively with said payroll voucher stub portions to record employee earnings data;

C. spatial correlation means detachably mounting said journal sheet and said bank of checks in overlying relationship

with said discrete area of said checks in alignment with said first portion of said columns of said journal sheet and said discrete area of said voucher stub portions in alignment with said second portion of said columns of said journal sheet; and

D. an employee record card for entry of employee related information including employee earnings data for a yearly period, said card being removably interposed between said journal sheet and said bank of checks, the front surface of said employment record card having a first section along one side thereof for recording employee earnings data for a first six month period, a second section along the other side thereof for recording employee earnings data for a second six month period, and a middle section for entry of employee personnel information, said first and second sections each having a multiplicity of lines corresponding to the lines of said journal sheet and the vertical spacing of the shingled checks and at least a portion of the width providing a multiplicity of columns dimensioned and configured cooperatively with said voucher stubs to record employee earnings data entered on the voucher stubs, said record card being folded along a first vertical fold line spaced from said first section to interpose a folded under portion between the remainder of the card other than said first section and the journal sheet, a second vertical fold line located along a line spaced from said second section, said card including means for aligning the columns of said first section thereof in overlying registration with the second portion of said columns of said journal sheet and being so aligned, said card further including means for aligning the columns of said second section thereof in overlaying registration with the second portion of said columns of said journal sheet when said record card is unfolded along said first fold line and folded about said second fold line, said card further having indicia transfer means on the back surface thereof for transferring the employee earnings data entered on said discrete area of said voucher stub to said second portion of said columns of said journal sheet, said folded under portion of said card disposing a portion of the front surface of the folded card against said journal sheet to prevent transfer to said journal sheet of entries on said record card other than said employee earning data entered on said discrete area of said voucher stub, whereby the entry of employee earnings data on the discrete area on the front surface of a selected voucher stub is simultaneously recorded on said record card within said columns of said first section of said record card and on said journal sheet sheet within said second portion of said columns of said journal sheet.

4,465,307

PIPE COUPLER FOR INSULATED PIPES

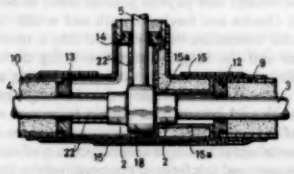
Tinus de Lange, Voormshoop, assignor to Wavin B.V., Zwolle, Netherlands

Filed Jul. 1, 1982, Ser. No. 394,131

Claims priority, application Netherlands, Jul. 2, 1981, 8103193

Int. Cl.³ F16L *59/16, 41/00, 25/00*

U.S. Cl. 285—47 **3 Claims**



1. A pipe coupler for use with main plastic pipe lines, comprising:

a central coupler having an outer shell and connecting means connecting said main pipe lines thereto and having at least one branch connection,

outer tubular casings about said main pipe lines and said branch connection,

an insulated foamed support for said central coupler main and branch pipe lines between said pipe lines and said outer casings,

an insulated foamed support for said central coupler main and branch pipe lines between said pipe lines and said outer casings,

annular sealing plugs disposed between the main pipe and branch pipe ends and said tubular casings at the connection of the outer shell of said branch connection to the casings,

spacer bush means disposed around said main and branch pipe ends between said central coupler and each of said sealing plugs, said spacer bushes being of split construction.

4,465,308

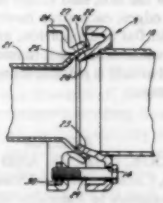
CONNECTION FLANGE FOR TUBULAR MEMBERS

Alfred R. G. Martini, Grass Lake, Mich., assignor to Tenneco Inc., Bannockburn, Ill.

Filed Nov. 5, 1981, Ser. No. 318,348

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—177 **10 Claims**



1. A connection flange formed of sheet metal of substantially uniform thickness for connecting a first fluid flow conduit having a flared end with an inner sealing surface to a second fluid flow conduit and for maintaining a substantially gas tight connection comprising:

a. an annular sealing portion extending in a first axial direction to sealingly engage the inner sealing surface of a flared end of said first conduit,

b. an annular web portion concentric with said sealing portion and extending radially at the periphery of said flange,

c. an annular socket for receiving an end of said second conduit, open toward the axial direction opposite to said first axial direction, and formed integrally in said flange concentric with and between said sealing portion and said web portion, and

d. at least two apertures formed in said web for receiving axially extending fastener means for drawing said sealing portion into engagement with said flared end.

4,465,309

CONNECTING OR REPAIR DEVICE

Helmut E. Nimke, Tuxedo, N.Y., and William R. Thomas, Malvern, Pa., assignors to UMAC, Inc., Paoli, Pa. and Brooklyn Union Gas Company, Brooklyn, N.Y., a part interest

Filed Aug. 13, 1981, Ser. No. 292,455

Int. Cl.³ F16L *21/06*

U.S. Cl. 285—373 **15 Claims**

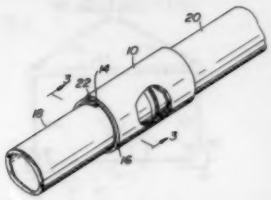
1. A device for connecting together ends of pipes or tubing, comprising:

a resilient sheet member in the form of a coil having at least partially overlapping surfaces, the inner diameter of said

sheet member coil being less than the outer diameters of the pipes or tubing to be joined;

a heat sensitive adhesive bonding material applied to the inner surface of said sheet member coil; and

said sheet member coil being expanded to a larger inner diameter against a resiliently inwardly directed force of said sheet member and held in said expanded condition by said heat sensitive adhesive bonding material between and bonded to said partially overlapping surfaces of said coil, the expanded larger inner diameter being of a sufficient



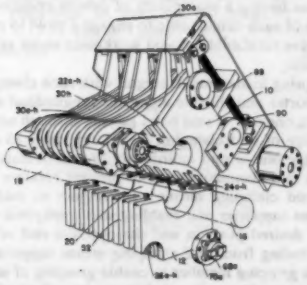
diameter to receive the ends of said pipes or said tubing to be joined, whereby said ends may be easily inserted into said coiled sheet member, said coiled sheet member being heatable whereby said heat sensitive adhesive bonding material melts allowing said sheet member to contract inwardly forming a tight bond between the inner surface of said sheet member and said pipes or tubing to be joined to form a strong bond upon cooling of said heat sensitive adhesive bonding material with said resilient sheet member coil providing support.

4,465,310

CLAMPING AND HIGH PRESSURE CONTAINMENT DEVICES

Lee A. Archer, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Oct. 6, 1982, Ser. No. 433,058
Int. Cl.³ F16L *17/04*
U.S. Cl. 285—373 **32 Claims**



23. A clamping device for a cylindrical object comprising:

(a) a clamping body having a cylindrical bore for receiving an object to be clamped, said body being split longitudinally with respect to said bore, into first and second clamping members being adapted to be urged together into clamping relationship; said clamping body having at least two sides;

(b) at least one link having first and second ends respectively associated with at least one side of said first and second members of said clamping body; means for securing said first and second clamping members to one another connected to the other side of said clamping member;

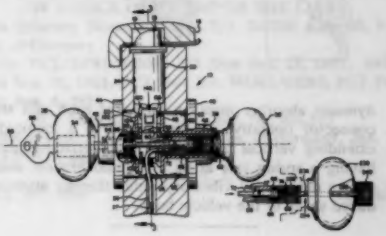
(c) means for coupling said first and second ends of each such link to said associated members of said clamping body, said coupling means for at least said first end of each link including a cam which is movable to a predetermined position, whereby movement of said cam to said predetermined position moves said end of said link relative to its associated body member and forces said body members toward each other into clamping relationship.

4,465,311

REMOTE CONTROL LOCKING SYSTEM

George K. Austin, Rte. 2, Box 254B, Newberg, Oreg. 97132

Filed Oct. 19, 1981, Ser. No. 312,924
Int. Cl.³ E05C *1/12*; E05B *3/00, 53/00*
U.S. Cl. 292—144 **10 Claims**



1. A fluid-controlled door lock for use in a door comprising:

a pair of rotatably mounted door handles, at least one of which is rotatable along an axis which extends substantially perpendicularly through the door;

latching means extending in a direction substantially perpendicular to said axis for latching the door into a fixed position, the position of said latching means being controllable by said handles;

locking means selectively displaceable between first and second positions which are axially displaced with respect to one another along said axis to prevent rotation of at least one of said handles when said locking means is in said first position, rotation being permitted when said locking means is in said second position;

fluid operated means for selectively displacing said locking means between said first and second positions, thereby locking and unlocking said handles;

a mechanical override device; and said fluid-operated means including means for engaging the mechanical override device to permit alternate mechanical operation of said fluid-operated means for selectively displacing said locking means between said first and second positions.

4,465,312

TUNED BUMPER MOUNTING SYSTEM

Lawrence E. Werner, Grosse Pointe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 4, 1982, Ser. No. 432,590
Int. Cl.³ B60R *19/00*
U.S. Cl. 293—132 **4 Claims**

1. In an automotive vehicle body having a frame with a horizontal bumper bar disposed substantially transverse to the longitudinal axis of the vehicle frame, the combination therewith of a tuned bumper bar vibration absorber support system comprising:

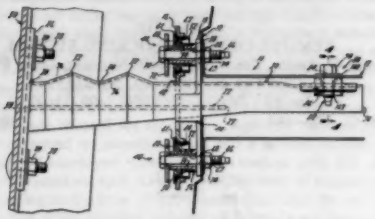
a plurality of bumper bar support connectors extending substantially parallel to said frame axis, each said connector aft end remote from said bumper bar terminating in pivotal attaching means such that each said connector aft end is pivotally mounted to said frame for pivotal movement about a fixed horizontally disposed axis;

each said connector having an elastomeric isolator bracket assembly intermediate its fore and aft ends resiliently supporting its associated connector on said vehicle frame;

said bracket assembly having a pair of elastomeric spring and

dampening isolator mounts horizontally spaced in a side-by-side symmetrical predetermined manner on either side of said connector; and

means fixedly supporting the bumper bar on the fore ends of the connectors whereby the bumper bar serves as a tuned



dynamic absorber mass by virtue of each said support connector operative for movement in a longitudinally extending vertical plane about said horizontal axis and having a spring rate at its associated bracket assembly over a determined vibratory range thereby attaining reduced shake of the vehicle body.

4,465,313

INSTALLATION FOR STORING AND TRANSPORTING ELONGATED OBJECTS

George Val, Alte Buchserstr. 14, Däillikon, Switzerland

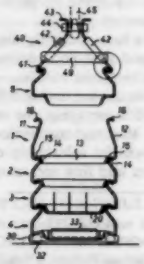
PCT No. PCT/CH81/00038, 371 Date Nov. 20, 1981, 102(e) Date Nov. 20, 1981, PCT Pub. No. WO81/02877, PCT Pub. Date Oct. 15, 1981

PCT Filed Apr. 1, 1981, Ser. No. 325,423

Claims priority, application Switzerland, Apr. 1, 1980, 2569/80

Int. Cl.³ B66C *1/16*

U.S. Cl. 294—67 DA **11 Claims**



1. Apparatus for storing and transporting elongated workpieces such as rods and pipes comprising a plurality of frames stackable one on the other, each frame comprising a pair of parallel spaced elongated side walls and a plurality of longitudinally spaced cross bars interconnecting said walls along the length thereof, said side walls being substantially mirror images of each other having in cross section a curved profile provided with an upper and a lower flange aligned along a vertical plane, the upper flange extending outwardly from said vertical plane in a direction inclined downwardly from the horizontal, the lower flange having an extension directed inwardly and downwardly from the horizontal, said wall having a mid section between said upper and lower flanges bowing outwardly from the vertical plane of said flanges, said upper and lower flanges having conforming cross sectional shape whereby upon stacking one frame on another, the upper flanges of a lower frame cooperate with the lower flanges of an upper frame to center and support the upper frame.

4,465,314

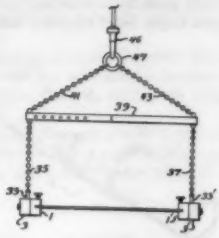
MATERIAL HANDLING APPARATUS

Mark E. Parson, and Rodney L. Parson, both of 9733 S. Menard, Oak Lawn, Ill. 60453

Filed Dec. 24, 1981, Ser. No. 334,302

Int. Cl.³ B66C *1/16*

U.S. Cl. 294—81 R **13 Claims**



1. A material handling apparatus for handling and precisely positioning a workpiece, at least two opposite sides of which comprise flanges, said apparatus comprising:

(a) two clamping means, each capable of being fixedly and detachably clamped to said flanges on at least two of said opposite sides of said workpiece, each of said clamping means having a slot therein defined by parallel planes, each said flange engaging one of said slots, each of said clamping means having a threaded hole therein which opens into said slot through one of said parallel planes;

(b) threaded shafts which engage said threaded holes in each of said clamping means, one end of said threaded shafts coming into forcible contact with said flanges as said threaded shafts are rotated in said threaded holes, thereby effecting said fixed clamping;

(c) a clamping means supporter rotatably attached to each of said clamping means which permits rotation of said clamping means about a horizontal axis, each of said clamping means and associated clamping means supporter having adjacent surfaces, said adjacent surface of said clamping means having a multiplicity of detents contained therein, each of such detents able to engage a pawl to prohibit the relative rotatability of said workpiece about said horizontal axis;

(d) a spring loaded pawl integral with each clamping means supporter and slidable along the longitudinal axis of said pawl, one end of said pawl passing through said adjacent surface of said clamping means supporter to detachably engage one of said multiplicity of said detents associated with said clamping means to prevent rotative movement of said clamping means with respect to said clamping means supporter and enabling said workpiece to be fixed in a desired position and the opposite end of said pawl protruding from said clamping means supporter possessing a gripping member to enable grasping of said pawl at said protruding end and thereby the pulling of said pawl from said one of a multiplicity of detents against the force of the spring to enable removal of said pawl from clamping means and to thereby provide free rotation of said clamp means with respect to said clamping means supporter;

(e) a tensile member attached from above to each clamping means supporter at one end of said tensile member;

(f) a rigid elongated separating member to which each tensile member is attached at the end of said tensile member opposite the end attached to said clamping means supporter, said separating member being of sufficient length to effect sufficient separation of said tensile members to preclude contact of said tensile members with said workpiece when said workpiece is rotated about a horizontal axis while clamped to said clamping means;

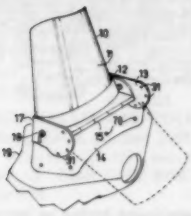
(g) a support structure supporting said separating member and attached to said separating member in a manner which enables the fixing of a desired relationship of said separating member to the horizontal.

4,465,315

HINGED WINDSHIELD FOR CYCLES

Roger H. Barstow, 146 Kathleen Dr., Attleboro, Mass. 02703

Filed Jan. 25, 1982, Ser. No. 342,504
Int. Cl.³ B62J *17/04*
U.S. Cl. 296—78.1 **6 Claims**



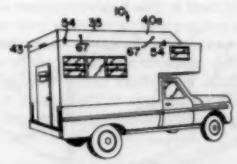
1. A hinged windshield for cycles formed by mounting a continuous hinge transversely onto an existing windshield, wherein the hinge is comprised of two rigid plates pivotally connected by a straight pin and the edges of the plates opposite the pin are provided with flanges conforming to the shape of the windshield, so that when the flanges of both plates have been secured to the windshield, the windshield may be severed across the width of the windshield between the two plates to form an upper windshield section and a lower windshield section which pivot relative to one another about the hinge.

4,465,316

COLLAPSIBLE STRUCTURE FOR USE WITH A RECREATIONAL VEHICLE

David M. Roisen, Rte. Two, Dawson, Minn. 56232

Filed Mar. 29, 1982, Ser. No. 363,050
Int. Cl.³ B60P *3/32*
U.S. Cl. 296—161 **20 Claims**



1. An apparatus for attachment and storage of a collapsible structure to a roof, having a front edge, a back edge and two side edges, of a recreational vehicle comprising:

(a) a collapsible structure, said collapsible structure comprising:

(i) a collapsible frame having four rigid members cooperatively connected to form a rectangular back section, four rigid members cooperatively connected to form a rectangular front section and first and second upper hinged rigid members and first and second lower hinged rigid members pivotally connecting said front and back sections forming two side wall sections, a floor section and a ceiling section; and

(ii) a box shaped flexible enclosure, attached to said collapsible frame;

(b) a guide means for glidably guiding the collapsible structure whereby said collapsible structure may be moved between a stored position and an extended position;

(c) a roller means fastened to said collapsible structure for slidably moving said collapsible structure on said guide means;

(d) a container, for attachment to the roof of the recreational vehicle, housing said collapsible structure, said guide means and said roller means; and

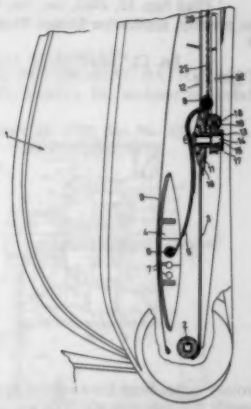
(e) said guide means fastened to said container.

4,465,317

MECHANISM FOR ADJUSTING A LUMBAR SUPPORT OF A BACK OF A SEAT OR THE LIKE

Johann Schwarz, Neusser Strasse 731, D-5000 Köln 60, Fed. Rep. of Germany

PCT No. PCT/EP81/00006, 371 Date Sep. 25, 1981, 102(e) Date Sep. 25, 1981, PCT Pub. No. WO81/02093, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 22, 1981, Ser. No. 306,911
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002827; Jan. 17, 1981, 3101327
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—284 **16 Claims**



1. A mechanism for adjusting a lumbar support of a back of a seat or armchair or the like, more particularly office seats, motor vehicle seats or the like;

(a) frame means in said seat back, said frame means having an elongated guide means extending in the longitudinal direction of said seat back;

(b) support means mounted on said guide means for movement therealong in said longitudinal direction;

(c) elongated means pivotally mounted at one end of said support means for movement in a plane transverse to the plane of said seat back;

(d) a plate-like moulding mounted on the end of said elongated means opposite said one end thereof;

(e) means mounted on said support means and connected to said elongated means to control the pivotal position of said elongated means;

(f) a shaft;

(g) means mounting said shaft on said support means, with its axis extending substantially in the plane of said seat back and transverse to said longitudinal direction of said seat

back, for axial movement between first and second positions and for rotational movement;

(h) at least one elongated toothed rack mounted in said seat back and extending in said longitudinal direction of said seat back;

(i) first transmission means for coupling said shaft, when in said first axial position, to said control means such that rotation of said shaft pivots said elongated means to move said plate-like moulding along a path transverse to said plane of said seat back; and

(j) second transmission means for coupling said shaft, when in said second axial position, to said at least one toothed rack such that rotation of said shaft moves said support means along said guide means to move said plate-like moulding along a path in said longitudinal direction of said seat back;

(k) whereby said plate-like moulding may be adjusted by said shaft along both planes transverse to and substantially parallel to said longitudinal direction of said seat back.

4,465,318

ROTARY CUTTING HEAD FOR MINING MACHINES WITH MEANS FOR INDUCING AIRFLOW AND SENSING THEREOF

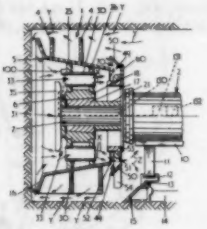
Wiasor T. Lewis, Ashby-de-la-Zouch, and Eric J. Browning, Lichfield, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Sep. 15, 1982, Ser. No. 418,424

Claims priority, application United Kingdom, Oct. 13, 1981, 8130808

Int. Cl.³ E21C *35/22, 35/04*

U.S. Cl. 299—1 **5 Claims**



1. A rotary cutter head for a mining machine, comprising a hub assembly drivably mountable on a rotary drive unit of the mining machine, a barrel component secured around the hub assembly and provided with cut material loading vanes, means for inducing an airflow in the vicinity of the cutter head, and sensor means for sensing the air flow and for deriving a signal indicative of the sensed air flow.

4,465,319

INTEGRATED CUTTER, BREAKER AND HAULAGE DRIVE GEARCASE

James Brownlie, Overtown, Scotland, assignor to Anderson Strathclyde PLC, Glasgow, Scotland

PCT No. PCT/GB82/00058, 371 Date Dec. 8, 1982, 102(e) Date Dec. 8, 1982, PCT Pub. No. WO82/03654, PCT Pub. Date Oct. 28, 1982

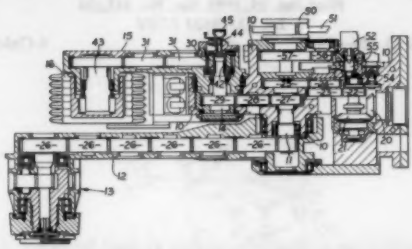
PCT Filed Feb. 22, 1982, Ser. No. 448,859

Claims priority, application United Kingdom, Apr. 23, 1981, 8002596

Int. Cl.³ E21C *25/10*

U.S. Cl. 299—42 **2 Claims**

1. A mining machine gearcase comprising a rectangular casing having therein intermediate the ends thereof first and second co-axial and mutually-spaced transverse horizontal shafts projecting through opposite sides of the casing and adapted rotatably to be driven by way of transmissions individual thereto from an electric motor and a hydraulic motor, respectively, both outside of the casing, the former being positioned to one end of the casing and the latter to one side of the casing and between said one end and said second shaft, and the first shaft rotation being adapted to be utilised to actuate, through a gear train at the other side of the casing, a cutter drum external to the other end of the casing, and also to actu-



ate, through a gear transmission having an interposed clutch and disposed within the casing between the first shaft and said other end of the casing and a first stage of which is a gear wheel fast with and centered on the first shaft intermediate its length, means also external to said other end of the casing for breaking up large lumps of coal which have dropped during a cutting operation, the clutch being operable from outside of the casing.

4,465,320

CUTTER DRUM ASSEMBLY FOR LONGWALL MINING MACHINES

Herbert Schupphaus, Bochum, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

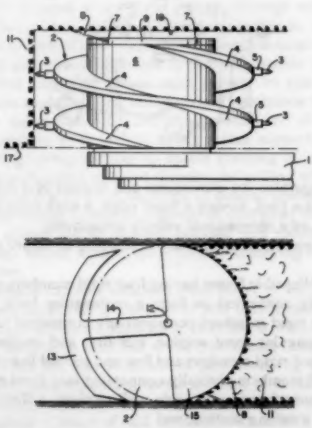
Filed Jul. 29, 1981, Ser. No. 288,037

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032204

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ E21C *25/60*

U.S. Cl. 299—81 **4 Claims**



1. A cutter drum for longwall mining machines and the like comprising a rotatable member having cutting bits disposed on

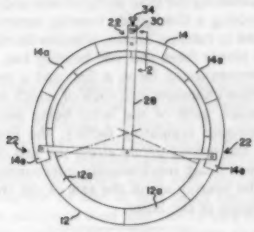
its outer periphery and arranged to rotate about an axis extending parallel to a mine floor, said drum being movable along a longwall face to provide a cut extending back into the face as the drum rotates and advances, the end of the drum at the back of the cut being free of cutting bits, a non-rotatable, relatively thin-walled disc secured to the axis about which the drum rotates, and nozzles distributed over the periphery of said disc in two groups, one group being adapted to deliver high-pressure liquid in one direction of machine travel and the other group being adapted to deliver high-pressure liquid in the other direction of machine travel, said nozzles being carried on said disc at the end of the drum at the back of said cut for spraying high-pressure liquid radially outwardly from the axis of said drum onto the material being mined at the back of the cut to loosen and dislodge the same, said high-pressure liquid acting to loosen and dislodge material being mined without the assistance of cutting bits.

4,465,321

COMPRESSION LOADED COLLAPSIBLE WHEEL

Charles A. Berg, R.F.D. #1, Box 2650, Buckfield, Me. 04220

Filed Sep. 20, 1982, Ser. No. 419,816
Int. Cl.³ B60B *19/00*; B60C *7/00, 19/00*
U.S. Cl. 301—5 R **21 Claims**



18. A portable collapsible wheel having a rotating wheel element and nonrotating fender mounting element comprising:

circular rotating wheel rim means comprising a full circle and formed around its outer periphery with a running surface portion for contacting the ground and a groove portion for bearing against roller means;

circular nonrotating fender rim means comprising only a portion of a circle but greater than a half circle arc, said fender rim means provided with at least three roller means complementary with the groove portion of the wheel rim means, said at least three roller means spaced apart around the inside of the fender rim means to define a supporting arc greater than a half circle in a common plane, said fender rim means further comprising brace means tying together the ends of the fender rim means.

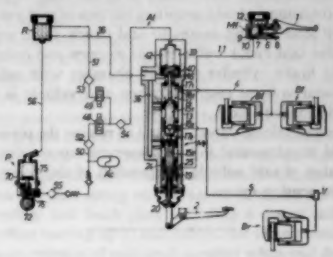
4,465,322

BRAKING SYSTEM FOR MOTORCYCLES

Tsutomu Hayashi, Hoya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,027
Claims priority, application Japan, Aug. 24, 1981, 56-132416
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 A **6 Claims**

1. A braking system for motorcycles, comprising a first manual brake-operating member, a second foot-power brake-operating member, a brake oil pressure generating unit, which is provided with a first brake oil pressure chamber having a first output port, and a second brake oil pressure chamber having a second output port, and which is capable of generating a brake oil pressure in said first and second brake oil pressure chambers by an input from either said first brake-operating member or said second brake operating member to output a brake oil pressure from said first and second output ports, a brake for front wheels, which is communicated with said first output port, and which is adapted to be operated by an output oil pressure from said first output port and thereby apply the braking force to said front wheels, a brake for rear wheels, which is communicated with said second output port, and



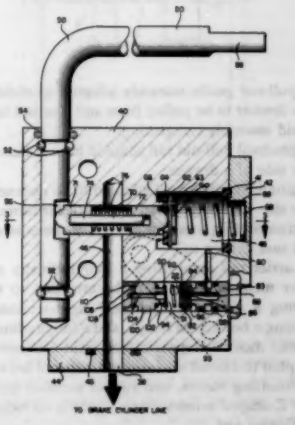
which is adapted to be operated by an output oil pressure from said second output port and thereby apply the braking force to said rear wheels, and an anti-lock means capable of lessening and restoring during a braking operation the braking force applied by either said brake for front wheels or said brake for rear wheels.

4,465,323

RAILROAD NET BRAKING RATIO VALVE

Kenneth D. Swander, Lansing, Ill., assignor to Hadady Corp., Lansing, Ill.

Filed Feb. 25, 1982, Ser. No. 352,142
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—23 R **1 Claim**



1. An empty or loaded brake control device for a railroad vehicle having sprung and unsprung portions, said brake control device comprising:

a brake cylinder having a pressure chamber adapted to operate under the influence of air pressure;

a supplemental volume reservoir;

a check valve means adapted to communicate said brake cylinder pressure chamber with said supplemental volume reservoir upon opening, said check valve means being held in the closed position by compressed spring means;

an overpressure valve, resiliently biased into the closed position, which permits a partial buildup of pressure in

said brake cylinder pressure chamber before the supplemental volume reservoir is communicated with said brake cylinder pressure chamber;

a load sensing means adapted to sense the relative position of said sprung and said unsprung portions of said railroad vehicle;

means to transmit information as to the relative position of said sprung and said unsprung portion of said vehicle from said load sensing means to said check valve means, and cause said check valve means to open and communicate said brake cylinder pressure chamber with said supplemental volume reservoir when said vehicle is less than fully loaded; and

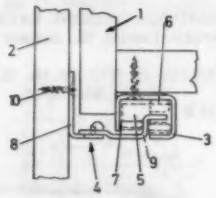
a pressure release valve adapted to release the pressure from said supplemental volume reservoir upon release of the brakes of said vehicle independent of the position of the load sensing means.

4,465,324

PULL-OUT GUIDE FOR DRAWERS OR THE LIKE

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum GmbH, Höchst, Austria

Filed Oct. 18, 1982, Ser. No. 435,099
Claims priority, application Austria, Oct. 30, 1981, 4637/81
Int. Cl.³ A47B 88/04
U.S. Cl. 308—3.8 **7 Claims**



1. A pull-out guide assembly adapted to slidably support a side of a drawer to be pulled from and inserted into a furniture body, said assembly comprising:

a longitudinal pull-out rail adapted to be fastened to a respective side of a drawer;

a longitudinal carrier rail adapted to be fastened to a respective side of a body of an article of furniture;

load transmitting means mounted between said pull-out rail and said carrier rail;

said carrier rail comprising a longitudinally extending fastener member adapted to be attached to the body and having a generally L-shaped cross-sectional profile including a horizontal flange, and a longitudinally extending runner member separate from said fastener member and adapted to extend into said pull-out rail between said load transmitting means, said runner member having a generally Z-shaped cross-sectional profile including a horizontal flange; and

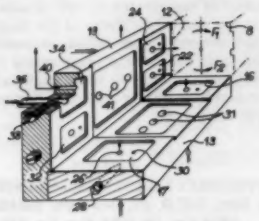
means for, when assembling the drawer to the body, allowing said runner member to be carried by said load transmitting means and said pull-out rail, and for, when the drawer is assembled to the body, removably attaching said runner member to said fastener member, said means comprising positioning pins extending upwardly from said horizontal flange of said fastener member and holes extending through said horizontal flange of said runner member, said pins extending through said holes with said horizontal flange of said runner member being on top of and overlapping said horizontal flange of said fastener member.

4,465,325

DEVICE FOR HANDLING A LOAD

Michel Faure, Igny, and Jean-Louis Poinssot, Palaiseau, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 7, 1982, Ser. No. 415,348
Claims priority, application France, Sep. 10, 1981, 81 17150
Int. Cl.³ F16C 32/06; G21C 19/00
U.S. Cl. 308—5 R **3 Claims**



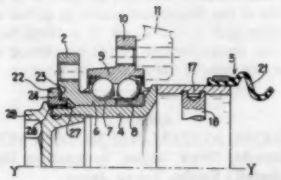
1. A device for handling a load by means of a shaft having a polygonal cross-section, said device comprising translation means for translating the shaft along its axis and said translation means comprising a fluid guide bearing immersed in a liquid and connected to rotation means, wherein the shaft has at least two parallel planar faces and said bearing has, facing each of the two aforementioned faces, a first and a second group of two distribution chambers into each of which issues a pressurized fluid intake, each of the latter being provided with an individual pressure regulating facility, the first group being spaced from the second group along the axis of the shaft and the two groups being mechanically interconnected, so that a rotation of the bearing about the axis of the shaft leads to an identical rotation of the latter.

4,465,326

APPARATUS FOR MOUNTING A WHEEL, PARTICULARLY A STEERING AND DRIVING WHEEL FOR AN AUTOMOBILE

Pierre L. Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France

Filed Sep. 29, 1982, Ser. No. 432,104
Claims priority, application France, Oct. 23, 1981, 81 19925
Int. Cl.³ F16C 33/58, 43/04
U.S. Cl. 308—191 **2 Claims**



1. Apparatus for mounting a wheel, in particular a steering and driving wheel of a motor car having a suspension, the apparatus comprising a wheel-carrying disk and a rolling bearing means comprising a double row of rolling elements, two interior rings and an exterior ring which is for connection to the suspension, one of the interior rings being adjacent to the wheel-carrying disk and in one piece with said wheel-carrying disk, so as to constitute a single element, said single element and the other of the interior rings being carried by a centering tubular member which latter is distinct from said other interior ring, said single element being rigidly fixed to the tubular member against rotation and movement in translation by a collar which includes frontal grooves corresponding with and

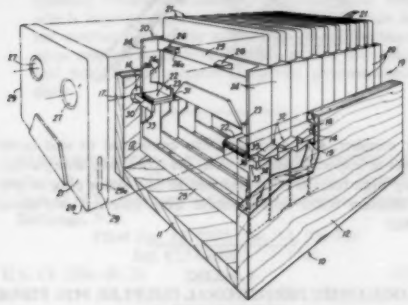
engaging frontal grooves on an outside face of the wheel-carrying disk and is welded to the tubular member.

4,465,327

ARTICLE STORAGE AND RETRIEVAL ASSEMBLY

Martin J. Westley, 2964 N. Fulton Dr. NE. #8, Atlanta, Ga. 30305

Filed Mar. 8, 1982, Ser. No. 353,982
Int. Cl.³ A21B *81/06*
U.S. Cl. 312—11 **13 Claims**



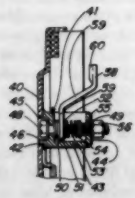
11. A storage anad retrieval assembly comprising, a support and a continuous carrier moveably carried by said support, said continuous carrier including a continuous belt formed of alternate hinge members and bases, said bases being joined along their edges by said hinge members and a plurality of juxtaposed cradles protruding outwardly from said belt, each of said cradles being carried by one of said bases and detent means extending from said back over said one of said bases, each of said cradles being open along a side opposite to said back for removeably receiving an article to be stored in said cradle and on said detent means through the open side, a portion of the travel of said belt being such that the back of an adjacent cradle is positioned over said open side sufficiently that it precludes removal of the article from the detent of its cradle during that portion of said travel, said back of an adjacent cradle being spaced from said open side for permitting removal of the article from said open side during another portion of said travel.

4,465,328

ROTATING LATCH WITH POSITIVE INDICATION OF LATCHING

George Tihanyi, Montreal, and Zbigniew T. Karwowski, Dollard des Ormeaux, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 21, 1982, Ser. No. 391,933
Int. Cl.³ E05C *5/02*
U.S. Cl. 312—215 **2 Claims**



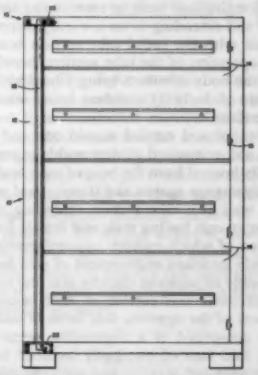
1. An enclosure having a door and a door frame and including a latch at top and bottom of said door and frame, each latch including a rotatable latch assembly mounted on said door and a latch plate mounted on said door frame, said rotatable latch assembly comprising; a aperture in a front face of said door, a bracket mounted at its outer end on an inner surface of said front face at said aperture, said bracket including a recess at its outer end and a first bore extending from an inner end of said recess and coaxial therewith, said recess and said bore aligned with said aperture, a web extending at an inner end of said bracket and a second bore in said web coaxial with said recess and said first bore, an axially slidable sleeve in said second bore, a headed bolt extending through said first bore and said sleeve, the head situated in said recess, a rotatable latch member mounted for axial movement on said bolt and rotatable therewith and including a radially extending finger, a compression spring positioned on said bolt between said rotatable latch member and said sleeve, and a nut on an inner end of said bolt on the side of said web remote from said rotatable latch member, said nut retaining said bolt and said rotatable latch member in position and also acting on said sleeve to adjust the loading of said spring; said latch plate including a detent and an inclined surface leading up to said detent, the arrangement being such that on rotation of said latch member when said door is in a closed position, said radially extending finger moves up said inclined surface against said spring to said detent, said finger snapping into said detent at a fully latched position.

4,465,329

STORAGE CABINET TRAVEL LOCK

Robert T. Haas, and Lawrence W. Howard, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1983, Ser. No. 475,417
Int. Cl.³ E05B *65/46*
U.S. Cl. 312—216 **4 Claims**



1. A locking device for releasably securing a plurality of drawers in a cabinet, said locking device comprising:

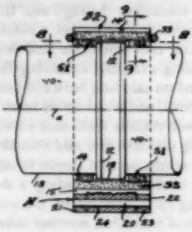
a. a pair of upper and lower support brackets; said upper and lower brackets respectfully secured to upper and lower surfaces of said cabinet, each said support bracket having a horizontally extending portion provided with a pair of joined semi-circular openings therein, said upper support bracket having a member thereon provided with a beveled surface;

b. a rod slidably supported in said brackets, said rod disposed for engagement with said drawers for retention thereof in secured relation, said rod being positioned in a first said opening of said brackets for the secured relation of said drawer and moveable to a second said opening of said brackets for release of said drawers, said rod including a stop member having a beveled surface for mating with said beveled surface of said upper bracket for secured relation of said rod in said first opening thereof.

4,465,330
CLAM-SHELL COUPLING FOR JOINING BEADED TUBES

Herbert A. De Cenzo, 3917 Cannon Ave., Las Vegas, Nev. 89121

Filed Jan. 17, 1980, Ser. No. 112,956
Int. Cl.³ H01R 4/66; F16L 21/06
U.S. Cl. 339—14 R 40 Claims



1. A split coupling of clam-shell configuration for sealed lateral application over the radially beaded open end of a tube, and including;

a pair of segmental body members separable at a diametrically disposed plane coincidental with a central longitudinal axis and at which plane opposite side faces of the body members have abutted interface engagement,

a longitudinal bore concentric with said axis and extending through the pair of body members to open at one end thereof for the reception of an end portion of the tube section,

a counterbore in the body members and of greater diameter than the longitudinal bore to receive the radial tube section bead and extending to an inwardly disposed shoulder engageable with the radial tube section bead thereby to prevent separation of the tube section therefrom,

one side of the body members being joined by hinge means, the other side of the body members being releasably joined by latch means,

a circumferential seal carried at said one end of the body members and comprised of depressible segments projecting radially inward from the bore of each body member to depressibly engage against and thereby seal with the outer diameter wall of a tube section extending therethrough, said seal segments having male and female formations and at least one of which extends circumferentially from the abutted side interface engagement of said body members to depressibly engage and thereby seal one with the other,

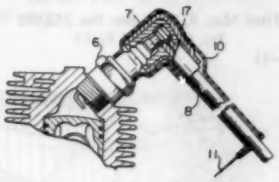
and a longitudinal seal carried at each abutted interface engagement of the opposite side faces of said body members and comprised of a depressible section projecting from the side face of one body member to depressibly engage against and thereby seal with the side face of the other body member at the abutted side interface engagement thereof extending from the circumferential seal segments at the one end of the body members.

4,465,331
DEVICE FOR PREVENTING RADIO FREQUENCY INTERFERENCE FROM SPARK PLUG

Isao Masuda, Tachikawa, and Tadashige Kondo, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Continuation of Ser. No. 310,707, Oct. 13, 1981, abandoned.
This application Jan. 6, 1984, Ser. No. 568,950
Claims priority, application Japan, Oct. 2, 1980, 55-139735
Int. Cl.³ H01R 4/66
U.S. Cl. 339—14 R 1 Claim

1. A device for preventing radio frequency interference from a spark plug for a spark ignition type internal combustion engine comprising: a cover member made of a soft, flexible and electrically conductive rubbery high molecular compound, said cover member fitting tightly around at least a part of the high-voltage portion of said spark plug; and means for grounding said cover member to the body of said engine, said cover member extending only to those portions of the spark plug not including the high temperature base portion of the spark plug, a ground line grounded to the engine and connected to said

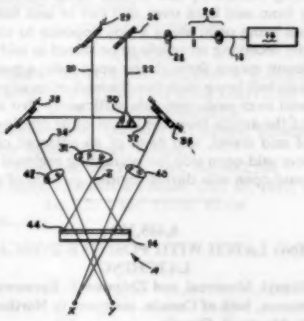


cover member, said grounded line connected to said cover member at a spaced distance from the spark plug along a connecting high tension cord attached to said spark plug to prevent ambient water and moisture from entering said cover member.

4,465,332
HOLOGRAPHIC DIRECTIONAL COUPLER FOR FIBER OPTIC SYSTEMS

Joseph L. Horner, Cambridge, and Jacques E. Ludman, Westford, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,622
Int. Cl.³ G02B 5/32
U.S. Cl. 350—96.19 8 Claims



1. A holographic directional coupler for fiber optic systems comprising:

a housing, said housing having at least three openings therein, and means situated adjacent each of said openings for securing an end of an optical fiber therein;

a holographic element, said holographic element being secured within said housing in optical alignment with said ends of each of said optical fibers and wherein said holographic element separates a beam of electromagnetic radiation at a single wavelength emanating from said end of one of said optical fibers into at least two beams which are directed to and coupled into each of said ends of the other of said optical fibers with less than 100% efficiency, respectively, or combines at least two beams of electromagnetic radiation emanating from said ends of said other of said optical fibers, respectively, into a single beam which is directed to and coupled into said end of said one optical fiber with substantially 100% efficiency;

said end of said one optical fiber being situated at one prese-

lected position with respect to said holographic element and said ends of said other optical fibers being each situated at other distinct preselected positions, respectively, with respect to said holographic element; and

the relationship between said holographic element and said preselected positions of said ends of said optical fibers being substantially the same as the relationship between a photosensitive medium, the point source from which a diverging beam of spatially coherent electromagnetic radiation emerges before impinging on said photosensitive medium, and the focal points of at least two converging spatially coherent beams of electromagnetic radiation which impinge upon said photosensitive medium but do not overlap each other at the area of said impingement upon said photosensitive medium during the making of said holographic element from said photosensitive medium.

4,465,333

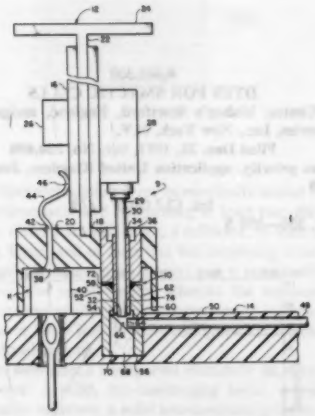
ELECTRO-OPTICAL PLUG-IN INTERCONNECTION

Anthony L. Caserta, Huntington, and Bruno Lijoi, Farmingdale, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,688

Int. Cl.³ G02B 5/14, 7/26

U.S. Cl. 350—96.20 **8 Claims**



1. A plug-in interconnection for optically coupling fiber optic cable means to avioptic circuit devices, said interconnection comprising

a male optical connector encasing the terminal portion of said cable means, said cable means having an end exposed such that light passes therethrough;

a female optical receptable mounted on said circuit device for receiving said male optical connector in an on-axis, coaxial relationship, said receptacle having a bore on the longitudinal axis of said interconnection and a wall with an aperture formed through said wall, said aperture having an axis normal to the axis of said bore, said aperture axis being aligned with the axis of at least the end portion of an optical element of a circuit device;

reflecting means in said bore of said receptacle, said reflecting means having a reflecting surface in operative alignment with said axis of said optical element such as to reflect light between said cable means in said connector and said optical element of said circuit device whereby light signals can be communicated therebetween;

a male electrical termination element associated with said male optical connector; and

an electrical termination receptacle associated with said female optical receptacle with the axes of said electrical termination element and said interconnection have a parallel relationship such that there is a simultaneous coupling of both said electrical and optical elements thereof when said interconnection is plugged in.

4,465,334

MULTILAYER FIBER LIGHT CONDUCTOR

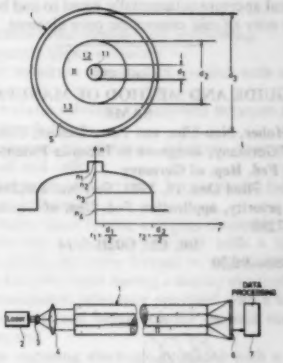
Dieter Siemsen, Haar, and Guenther Sepp, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 316,987

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042795

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.33 **11 Claims**



1. A multilayer fiber light conductor, comprising a first central light conductor member (1.1) having a given diameter, and a second light conductor member (1.2) concentrically surrounding said first central light conductor member, said second light conductor having a thickness larger than said given diameter of said first light conductor member, both light conductor members having the same given fiber length, said light conductor members forming respective separate light conducting zones (I, II) having different mode transit times relative to said given fiber length for separate transmission of separate optical signals in each of said light conducting zones (I, II), whereby the fiber light conductor is suitable for use in mode interference methods.

4,465,335

CONCENTRIC CORE OPTICAL FIBER COUPLER

Thomas A. Eppes, Carrollton, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1982, Ser. No. 433,756

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **21 Claims**

1. A fiber optical coupler, comprising in combination:

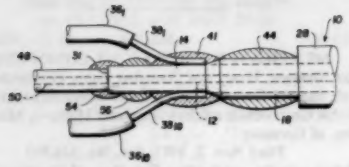
a concentric core optical fiber element having coaxial inner and outer light conducting cores separated by intermediate cladding material and having external cladding material over said outer core;

a region of said concentric core optical element where said external cladding material is removed exposing a predetermined length of said outer core;

at least one single core optical fiber element having a light conducting core and external cladding covering said core;

a region of said at least one single core element where said respective external cladding is removed exposing a predetermined length of said single core, said length of said

single core thus exposed being bonded to and optically matched to the length of said exposed outer core of said concentric core element; and



at least one other single core optical fiber element having a single light conducting core and external cladding and wherein the end of said respective single core has a numerical aperture substantially equal to and bonded to said inner core of said concentric core element.

4,465,336

WAVEGUIDE AND METHOD OF MANUFACTURING SAME

Hans P. Huber, Neu-Ulm, and Peter Russer, Ulm, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 330,264

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047290

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.30 **19 Claims**

1. A waveguide comprising an elongated dielectric core and dielectric cladding surrounding the core, at least one of the core and cladding, in the direction perpendicular to a major axis of the waveguide having at least one anisotropic index of refraction, at least one of the core and cladding being built up of a succession of at least one of electromagnetically isotropic and electromagnetically anisotropic layers which have unequal refractive indices in identical directions, and the major axis of the waveguide being substantially perpendicular to a surface normal to the layers.

4,465,337

REDUCED REFLECTIVITY MEMBER AND ION IMPLANTATION METHOD OF FABRICATION

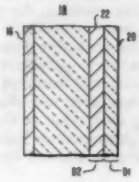
Moshe I. Baron, and Ram Kossowsky, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1982, Ser. No. 355,072

Int. Cl.³ G02B *1/10*; B05D *3/06*

U.S. Cl. 350—164 **7 Claims**

1. A light transmissive vitreous member having minimum light reflectivity from a light output surface, which vitreous member has a first index of refraction for the vitreous material of the member, and wherein an ion implanted, generally uniform thickness layer of buried ion phase of selected material is disposed a predetermined distance within the member below the light output surface, which layer is generally parallel to the



light output surface, and which layer has a predetermined thickness and an index of refraction which is greater than the index of refraction of the vitreous material such that the optical impedance of the buried ion phase layer and the vitreous material are closely matched.

4,465,338

DYES FOR SMECTIC CELLS

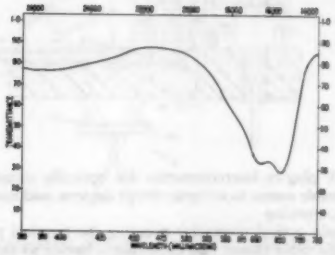
David Coates, Bishop's Stortford, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,498

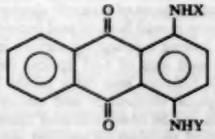
Claims priority, application United Kingdom, Jan. 23, 1981, 8102150

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—350 S **5 Claims**



1. A smectic display cell incorporating a smectic layer of material in which has been dissolved a dye having a strong optical absorption band registering with the helium neon laser emission line at 633 nm which dye satisfies the general formula

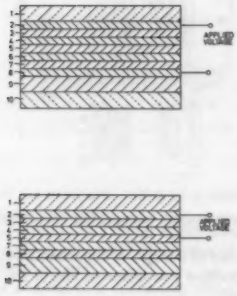


where X is an alkyl group and Y is an alkyl group having at least 7 carbons, or a substituted phenyl group.

4,465,339
ELECTROCHROMIC MIRRORS

Friedrich G. K. Baucke; Dieter Krause; Bernd Metz; Volker Paquet, and Johannes Zauner, all of Mainz, Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,161
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008768
Int. Cl.³ G02F 1/17, 1/19, 1/23
U.S. Cl. 350—357 21 Claims



1. In an electrochromic mirror hermetically sealed from the ambient environment and comprising at least two electrodes, at least one electrochromic layer, a reflector, at least one ion-conducting layer, and at least one ion-supplying layer which simultaneously is an ion-storing layer and is not identical with the reflector, the improvement wherein the ion-conducting layer consists essentially of an ion-conducting inorganic solid and the mirror has a line of sight configuration selected from the group consisting of:

(a) a glass substrate; a transparent electrode; an electrochromic layer; a solid, ion-conducting layer; a hydrogen-permeable reflector; a solid ion-conducting layer; an ion-storing layer; a catalytic layer acting simultaneously as an electrode; an adhesive; and a face pane;

(b) a glass substrate; a transparent electrode; an electrochromic layer; a solid, ion-conducting layer; a hydrogen-permeable reflector acting simultaneously as an electrode; an ion-storing layer; a catalytic layer; an adhesive; and a face pane;

(c) a glass substrate; a transparent electrode; an electrochromic layer; a solid, ion-conducting layer; a hydrogen-permeable reflector; an ion-storing layer; a catalytic layer acting simultaneously as an electrode; an adhesive; and a face pane;

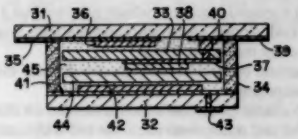
(d) a glass substrate; an electrochromic layer; a hydrogen-permeable reflector acting simultaneously as an electrode; a solid, ion-conducting layer; an ion-storing layer; a catalytic layer acting simultaneously as an electrode; an adhesive; and a face pane; and

(e) a glass substrate; a transparent electrode; an electrochromic layer; a solid, ion-conducting layer; a hydrogen-permeable reflector acting simultaneously as an electrode; an ion-storing layer; a solid, ion-conducting layer; an electrode permeable to water-vapor; an adhesive; and a face pane.

4,465,340
ELECTROCHROMIC DISPLAY CELL

Kunio Suganuma, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,183
Claims priority, application Japan, Feb. 13, 1981, 56-19688
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 6 Claims



1. An electrochromic display cell comprising:

(a) a transparent upper substrate;

(b) a lower substrate arranged in parallel with said upper substrate;

(c) an electrolytic substance interposed between said upper and lower substrates;

(d) a transparent intermediate substrate arranged in the interior of said cell;

(e) a reflection plate interposed between said intermediate and lower substrates;

(f) a first display layer having a display electrode made of an electrochromic substance provided with a transparent lead electrode, and being formed on said upper substrate;

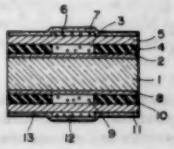
(g) a second display layer having a display electrode made of an electrochromic substance provided with a transparent lead electrode, and being formed on said intermediate substrate; and

(h) a single opposing electrode provided with a lead electrode and arranged between said reflection plate and said lower substrate.

4,465,341
ALL SOLID STATE COMPLEMENTARY ELECTROCHROMIC DISPLAY DEVICES

Takanori Nanya, Sayama; Eigo Hashimoto, Sakado, and Katsuo Nishimura, Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,524
Claims priority, application Japan, Jun. 23, 1981, 56-97180
Int. Cl.³ G02F 1/01, 1/17
U.S. Cl. 350—357 8 Claims



1. A solid state complementary electrochromic display device including:

(1) an optically transparent substrate;

(2) first complementary electrochromic display elements comprising,

(a) a first electrode which is formed on one surface of said substrate and is optically transparent,

(b) a first electrochromic material layer which is formed on a top surface of said first electrode, is capable of oxidation and reduction reactions, and is colored by one of the oxidation and reduction reactions,

(c) a first ion permeable insulating layer which is formed on a top surface of said first electrochromic material layer,

(d) a second electrochromic material layer which is formed on a top surface of said first ion permeable layer, is capable of oxidation and reduction reactions and is colored by the reaction opposite to that of the first electrochromic material layer of the oxidation and reduction reactions,

(e) a second electrode which is formed on a top surface of said second electrochromic material layer and is optically transparent; and

(3) second complementary electrochromic display elements comprising,

(a) a third electrode which is formed on the other surface of said transparent substrate and is optically transparent,

(b) a third electrochromic material layer which is formed on a top surface of said third electrode, is capable of oxidation and reduction reactions, and is colored by one of the oxidation and reduction reactions,

(c) a second ion permeable insulating layer which is formed on a top surface of said third electrochromic material layer,

(d) a fourth electrochromic material layer which is formed on a top surface of said second ion permeable insulating layer, is capable of oxidation and reduction reactions, and is colored by the reaction opposite to that of the third electrochromic material layer of the oxidation and reduction reactions,

(e) a fourth electrode which is formed on a top surface of said fourth electrochromic material layer and is optically transparent.

4,465,342

ZOOM LENS

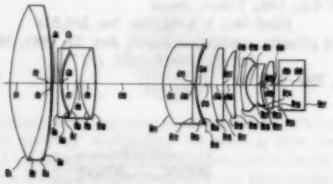
Kazuo Tanaka, and Shigeyuki Suda, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Jul. 20, 1981, Ser. No. 285,012

Claims priority, application Japan, Jul. 25, 1980, 55-102592

Int. Cl.³ G02B *13/18, 15/14*

U.S. Cl. 350—427 **6 Claims**



1. A zoom lens consisting of, from front to rear,

a first lens component of positive focal length having a cemented surface and at least one aspheric surface;

a second lens component of negative focal length having at least one aspheric surface;

a third lens component of positive focal length having at least one aspheric surface;

said first and second lens components being moved when in zooming, said first lens component being moved when in focusing, and said third lens component being stationary when in zooming and focusing; and

said aspheric surface provided in said first lens component being a surface having a negative third order aspheric coefficient, and said aspheric surface provided in said second lens component being a surface having a positive third order aspheric coefficient.

4,465,343

ZOOM LENS SYSTEM

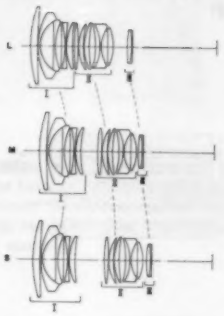
Mitsuaki Horimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 15, 1981, Ser. No. 254,409

Claims priority, application Japan, May 10, 1980, 55-62046; Jul. 9, 1980, 55-94260; Jul. 24, 1980, 55-102194

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—428 **17 Claims**



1. A zoom lens system comprising from the object to the image side:

a first lens group of a negative refractive power including at least two positive lens elements and at least one negative lens element;

a second lens group of a positive refractive power, the second lens group being of the triplet type formed by sandwiching a negative refractive power component in between a pair of positive refractive power components; and

a third lens unit of a positive refractive power including at least one positive lens element, wherein an air space between the first and second lens group and an air space between the second lens group and third lens unit are changeable for zooming and the lens system fulfills the following condition:

$$2.5 < f_{III}/f_{II} < 4.5$$

wherein f_{II} and f_{III} represent the focal lengths of the second lens group and third lens unit, respectively.

4,465,344

CAM DEVICE FOR A PHOTOGRAPHING LENS BARREL

Akiyasu Sumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Nov. 10, 1981, Ser. No. 319,959

Claims priority, application Japan, Nov. 13, 1980, 55-162243[U]

The portion of the term of this patent subsequent to Jun. 7, 2000, has been disclaimed.

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—429 **4 Claims**

1. A photographing lens assembly including a cam device, comprising:

(a) a fixed lens barrel member extending in the direction of an optical axis of said assembly;

(b) a focusing operation member which is mounted on said fixed lens barrel and is rotated around the optical axis, said member having a protrudent cam part formed at its inner circumference;

(c) a lens holding member which is movable in the direction of the optical axis and which holds a lens optical system;

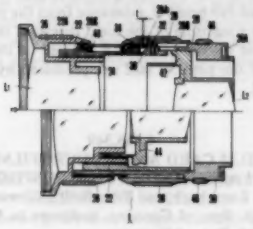
(d) cam follower means to control a movement of said lens holding member according to the amount of movement of the cam part,

said cam follower means consisting of:

a cam follower member held in place by a mounting member on the lens holding member,

said cam follower member being pressed against a cam surface of the cam part by spring means, and having a curvature of a contacting surface to satisfy the following formula:

$$R > r > r_1,$$



wherein

R: a value of the minimum radius of a cam curve of a cam surface of the cam part;

r_1: a value of a radius of a cutter to fabricate the cam curve of a cam surface, or a value of a radius of a cutter of a die to form the cam; and

r: a value of a radius of a contacting plane of said cam follower member.

4,465,345

SMALL-SIZE TELESCOPIC LENS

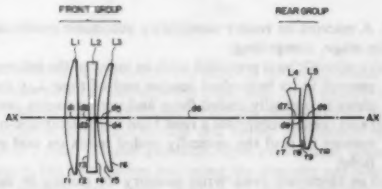
Junichi Yazawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,589

Claims priority, application Japan, Sep. 21, 1981, 56-149066

Int. Cl.³ G02B *9/60, 13/02*

U.S. Cl. 350—455 **4 Claims**



1. A small-size telescopic lens system consisting of five lens elements arranged so that a front group is located on the object side and a rear group is located on the image side, said front group, from the object side, comprising a biconvex lens which is the first lens element, a biconcave lens which is the second lens element, and a convex meniscus lens which is the third lens element and is convex toward the object side; and said rear group comprising a biconcave lens, which is the fourth lens element, on the object side, and a biconvex lens, which is the fifth lens element, on the image side; and satisfying the following five conditions:

$$0.9 < |f_F/f_R| < 1.2 \quad \text{(i)}$$

$$0.4 < l/f < 0.5 \quad \text{(ii)}$$

$$0.6 < f_1/f < 0.8 \quad \text{(iii)}$$

$$-1.3 < f_2/f < -0.9 \quad \text{(iv)}$$

$$1.45 < (1/r_3 + 1/r_5) \times f_F < 2 \quad \text{(v)}$$

where f is the composite focal distance of the entire system; f_F is the composite focal distance of the front group, f_R is the composite focal distance to the rear group, l is the interval between the principal points of the front group and the rear group, f_1 is the focal distance of the first lens element, f_2 is the focal distance of the second lens element, r_3 is the radius of curvature of the lens surface on the object side of the second lens element, and r_5 is the radius of curvature of the lens surface on the object side of the third lens element.

4,465,346

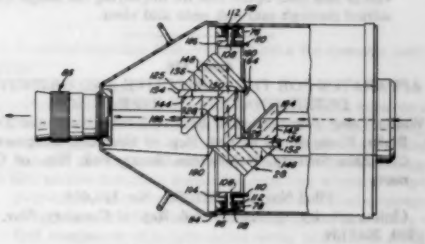
OPTICALLY STABILIZED TELESCOPE

David B. Fraser, 1335 Slayton Dr., Maple Glen, Pa. 19002

Continuation of Ser. No. 514,054, Oct. 11, 1974, abandoned, which is a continuation of Ser. No. 300,528, Oct. 25, 1972, abandoned. This application May 17, 1978, Ser. No. 906,701

Int. Cl.³ G02B *27/64, 23/00*

U.S. Cl. 350—500 **5 Claims**



1. An optical viewing instrument having means for stabilizing the image developed thereby at the image plane, comprising support means, an objective-lens, an eyepiece lens and a reflective image erection system, said objective lens including a principal plane therein and defining a major optical axis, said image erection system being supported in said optical axis by gimbal means, said gimbal means including a first member pivotably secured to said support means and adapted for rotation relative to said support means about a first axis normal to said major optical axis and a second member pivotably secured to said first member and adapted for rotation relative to said first member about a second axis normal to said first member and said major optical axis, said first and second axes intersecting at a first point in said major optical axis, said image erection system being secured to said second member with all of the elements of said image erection unit being movable as a single unit with said second member of said gimbal means, said gimbal means being statically balanced, and, said image erection system having coaxial input and output axes which are also coaxial with said major optical axis when said first and second members are in their normal position with respect to the major optical axis, said image erection system being composed of plane surfaces only and being non-dispersive wherein the rays of all colors coaxially entering the system along a line parallel to the optical axis coaxially exit the system parallel to the optical axis.

4,465,347

HELMET MOUNTED TELESCOPE

Harry L. Task, and Charles Bates, Jr., both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1982, Ser. No. 441,814

Int. Cl.³ G02B *23/04, 27/10*

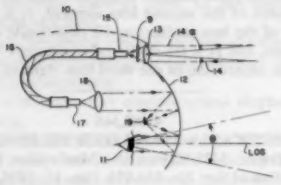
U.S. Cl. 350—538 **4 Claims**

1. An improved helmet including means for visually acquir-

ing an image of a field of view and displaying a magnification of said image to the wearer, comprising:

a. a telescopic objective lens mounted to said helmet near the top thereof for forming and transmitting a magnified image of said acquired field of view;

b. a reflective visor mounted to said helmet in the line of sight of said wearer;



c. a fiber optics link having a first end thereof mounted to said helmet near said objective lens for receiving said image transmitted by said objective lens; and

d. a collimating lens mounted to said helmet near the second end of said fiber optics link for displaying the image transmitted through said link onto said visor.

4,465,348

APPARATUS FOR THE SUBJECTIVE AND OBJECTIVE DETERMINATION OF REFRACTION

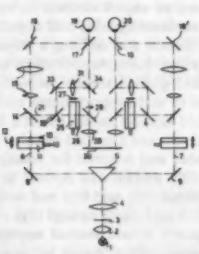
Walter Lang; Franz Muchel, both of Königsbronn, and Erich Blaha, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,403

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045139

Int. Cl.³ A61B *3/10, 3/02*

U.S. Cl. 351—211 **12 Claims**



1. Apparatus for the objective and subjective determination of refraction of the eyes of a test subject, said apparatus comprising:

(a) means forming two projection ray paths spatially separated from each other, one of said paths being associated with each eye of the test subject:

(b) means forming two observation ray paths also spatially separated from each other and respectively associated with said two projection ray paths;

(c) each projection ray path including a lens system (**15**) serving to image a test mark onto the retina of the associated eye;

(d) each observation ray path including an optical system (**29**) serving to focus light reflected from the retina of the associated eye at an observation plane;

(e) a first mirror (**14**) in each of said projection ray paths for reflecting light returning from the retina into the associated observation ray path;

(f) adjustment means (**10, 11; 25, 26**) arranged in each of said paths for adjusting continuously both astigmatism and spherical power in said optical systems in the respective ray paths;

(g) each of said ray paths having therein a partially transmitting mirror (**17, 19**) arranged in front of the associated eye for reflecting light projected along a projection ray path into said associated eye and also for transmitting other light through said mirror to said associated eye so that the eye may view surrounding objects;

(h) said lens system (**15**) being located in each projection ray path between said partially transmitting mirror (**17, 19**) and said adjustment means (**10, 11**) in such path;

(i) the lens of said lens system (**15**) which is closest to the associated eye being at a distance from the pupil of the eye which is a multiple of the focal length of the lens system;

(j) said first mirror (**14**) being located at the plane of an image of the pupil of said eye produced by said lens system (**15**).

4,465,349

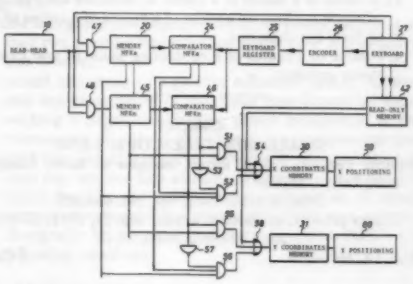
MICROFILM CARD AND A MICROFILM READER WITH AUTOMATIC STAGE POSITIONING

Jürgen Rinn, Launsbach, and Fritz Belitz, Giessen-Kleinlinden, both of Fed. Rep. of Germany, assignors to Minox GmbH, Giessen, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,241

Int. Cl.³ G03B *23/12*

U.S. Cl. 353—25 **15 Claims**



1. A microfiche reader comprising automatic positioning of a film stage, comprising:

(a) a microfiche is provided with an index of the information present in its individual images and of their x, y coordinates in optically coded form and with a timing track;

(b) said reader comprises a read head with electronic-optical sensors to read the optically coded index on said microfiche;

(c) an electronic read/write memory for storing an index is connected to said read head;

(d) an alphanumeric keyboard is provided to feed in a search concept and is followed by an encoder and a register for storing a coded keyboard input;

(e) a comparator is connected to said memory of said index and said register of said coded keyboard input, which determines the agreement between said search concept and a concept present in said index;

(f) said comparator and said memory of said index are followed by appropriate switching means which in turn are followed each by a digital/analog converter to generate each an analog DC potential corresponding to the x and y coordinates respectively of the film image containing said search concept;

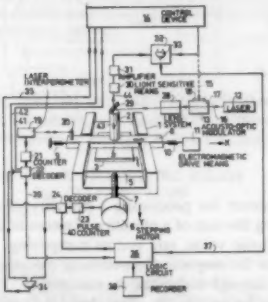
(g) a follow-up circuit consisting of a DC motor, a servopotentiometer and a differential amplifier is provided for each coordinate for the purpose of positioning said film stage and is fed with the DC potential at the outputs of said analog/digital converters; and

(h) means for reading at least a second microfiche containing all the modifications of a defined volume of data, in that an additional read/write memory for storing an index of said second microfiche follows said means for reading, in that an additional comparator for ascertaining agreement between said search concept and a concept present in said index of said second microfiche is present, and in that switching means for a logic connection of said additional read/write memory and the said additional comparator on one hand and said register of said alphanumeric keyboard and means for film-stage positioning on the other hand are present, in that following an input of said search concept said second microfiche is projected and an old microfiche only then is projected when said search concept is absent from said index of said additional read/write memory.

4,465,350
METHOD AND DEVICE FOR INSPECTING MICROMASK PATTERNS

Gerhard Westerberg, Danderydsvägen 36, 182 65 Djursholm, Sweden

Filed Dec. 8, 1981, Ser. No. 328,681
Claims priority, application Sweden, Dec. 11, 1980, 8008725
Int. Cl.³ B41B *41/00*
U.S. Cl. 354—4 **6 Claims**



1. A method of inspecting the patterns of a micromask, the micromask patterns having been generated by a writing laser beam that has been both moved in certain perpendicular directions relative to the micromask and varied in intensity in response to a control signal produced from information stored in a memory, the information indicating the intensity and position of the writing laser beam relative to the micromask, the method comprising:

A. moving said micromask relative to a laser inspection beam in the same directions as during generation of the patterns;

B. modulating said laser inspection beam with the patterns of said micromask to form a modulated laser beam by directing said laser inspection beam onto said micromask and performing one of reflecting the modulated beam from the patterns and transmitting the modulated beam through the patterns;

C. producing an electrical modulation signal indicating the modulation of the modulated laser beam;

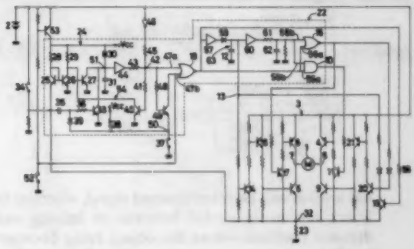
D. comparing said modulation signal with said control signal, said modulation and control signals being synchronized relative to the position of the laser inspection beam on the patterns; and

E. providing an inspection signal indicative of correct pattern generation when said modulation and control signals agree and indicative of inaccuracies in the pattern generation when said modulation and control signals differ.

4,465,351
MOTOR-OPERATED FILM DRIVING DEVICE FOR CAMERA

Shinji Tominaga, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1982, Ser. No. 424,741
Claims priority, application Japan, Sep. 28, 1981, 56-154497
Int. Cl.³ G03B *1/18*
U.S. Cl. 354—173.11 **5 Claims**



1. A motor-operated film driving device for cameras comprising:

a reversible motor;

a motor driving circuit arranged to be switchable between a first state for driving said motor forward for film winding, a second state for short-circuiting said motor and a third state for driving said motor in reverse for film rewinding;

a film tension detecting means for detecting whether or not over-tension is exerted on said film due to forced stoppage of said film, said film tension detecting means generating a first continuous detection signal while said film is being wound up and a second continuous detection signal when said film is over-tensioned due to the forced stoppage thereof, said first and second continuous detection signals being distinguishably different in level from one another;

a signal distinguishing means for distinguishing said second continuous detection signal from said first continuous detection signal to generate a switching signal; and

a delay circuit which starts operation in response to said switching signal to generate a delay signal upon lapse of a predetermined period of time from generation of said switching signal;

wherein said motor driving circuit is connected with said signal distinguishing means and said delay circuit such that it is switched from said first state to said second state in response to said switching signal and further switched to said third state in response to said delay signal, said predetermined time period being long enough to maintain said motor in said second state until disappearance of the electromotive force induced by the residual torque from the preceding forward motor running.

4,465,352
AUTOMATIC FOCUSING DEVICE

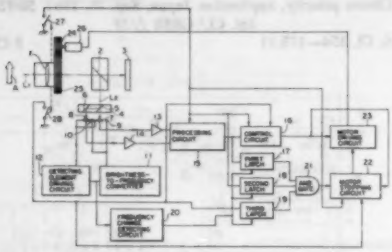
Hitoshi Hirobe; Shigeo Enomoto; Tadashi Minakuchi, and Shinji Urata, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,983
Claims priority, application Japan, Nov. 12, 1981, 56-180368
Int. Cl.³ G03D *3/00*; G03B *13/18*
U.S. Cl. 354—406 **10 Claims**

1. An automatic focusing device for moving a photographic lens to an optimum focused position comprising means for optically detecting object image contrast and means for generating a contrast signal based on said optically detected object image contrast, said contrast changing with varying positions of the photographic lens comprising:

lens motion stopping means for stopping said photographic

lens after it has been moved from a starting position no more than once between its infinity distance photographing position and its least distance photographing position when the level of said contrast signal is less than a threshold level of said detected contrast signal, whereby the lens is not repeatedly cycled between its infinity and least distance positions where the object being photographed has little or no contrast.



4,465,353

ELECTRONIC FLASH DEVICE

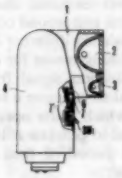
Masaaki Yoshida, and Hiroyuki Kataoka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

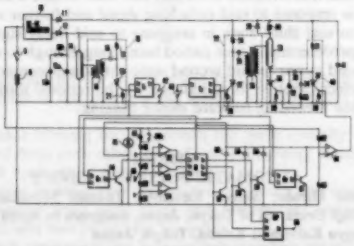
Filed Dec. 10, 1982, Ser. No. 448,744

Claims priority, application Japan, Dec. 28, 1981, 56-211332; Jul. 21, 1982, 57-125825

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—415 **9 Claims**





1. A flash device for carrying out preliminary illumination to determine an aperture value for flash photography prior to the making of an exposure, and a main illumination for taking a photograph, comprising:

(a) a body having displaceably mounted thereon a light source for said preliminary illumination and said main illumination, said body being provided with a light sensor for receiving the reflected light from an object to be photographed with said preliminary illumination, and said light source being displaceable relative to said body from a normal shooting position for direct flash photography to a bounce shooting position for bounce flash photography;

(b) a detecting circuit for detecting the reflected light due to said preliminary illumination received by said sensor, said circuit being receptive of the reflected light due to said preliminary illumination for determining said aperture value for flash exposure; and

(c) correcting means for lowering the sensitivity of a detecting operation of the reflected light by said detecting circuit when in bounce flash photography.

4,465,354

SYSTEM AND METHOD FOR CALCULATING A LIGHT INFORMATION VALUE

Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

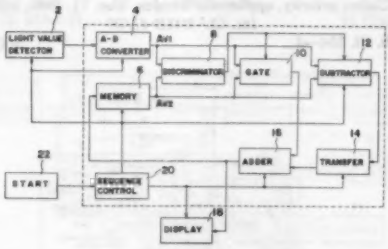
Continuation of Ser. No. 8,334, Jan. 31, 1979, Pat. No. 4,353,629. This application Jul. 28, 1982, Ser. No. 402,813

Claims priority, application Japan, Feb. 7, 1978, 53-13287

The portion of the term of this patent subsequent to Oct. 12, 1999, has been disclaimed.

Int. Cl.³ G03B *17/18*; G01J *1/42*

U.S. Cl. 354—426 **20 Claims**



1. A system for processing a plurality of signals used for calculating the sum of a plurality of pieces of light information in logarithmic value, said system comprising:

a means for respectively obtaining pieces of light information through individual measurements;

a means for producing a first signal indicative of a logarithmic value of one piece of light information;

a storing means for storing a second signal;

a means for producing a third signal indicative of a difference between said first and second signals;

a means responsive to said third signal for producing a fourth signal which is in a predetermined relationship with respect to said third signal; and

a means for adding said fourth signal to one of said first and second signals, the sum of said addition being applied to said storing means for storage as said second signal.

4,465,355

SINGLE-LENS REFLEX CAMERA

Hiroyasu Murakami, Tokyo; Akira Hiramatsu, and Makoto Katsuma, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 429,521

Claims priority, application Japan, Oct. 9, 1981, 56-161888; Dec. 22, 1981, 56-206130

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—475 **5 Claims**

1. A view finder display device for a camera, comprising:

a photo-taking lens;

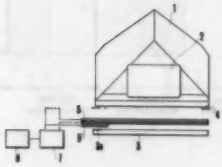
a reflecting mirror which reflects light from said photo-taking lens;

a penta-prism for having light reflected from said reflecting

mirror incident thereon, said penta-prism being arranged to project visible light;

a visual field frame disposed below said penta-prism, said visual field frame forming an aperture for a photographic visual field and an aperture for an information display;

a liquid crystal plate disposed below said penta-prism for forming a pattern to be displayed within the visual field and an information display pattern;



said liquid crystal plate being of the guest-host type;

a polarizing plate arranged to correspond only to the information display pattern of said liquid crystal plate; and

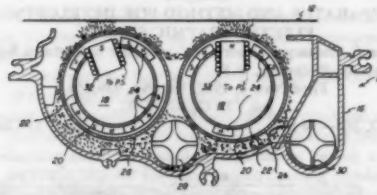
said polarizing plate forming a visual contrast difference between the display pattern within the visual field and the information display pattern.

4,465,356

MAGNETIC BRUSH DEVELOPER APPARATUS

Brian J. Joseph, Rochester, and James O. Williams, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,834
Int. Cl.³ G03G *15/09*
U.S. Cl. 355—3 DD **5 Claims**



1. In an apparatus for selectively developing an electrostatic charge pattern on an insulating member, such apparatus including a housing for containing particulate magnetic developer material, an applicator member mounted in said housing for movement in juxtaposition with such insulating member, means for magnetically attracting such material to said applicator member to form a nap of bristles on the applicator member, and means for relatively moving said applicator member and said magnetic means to position such bristles adjacent to but in non-contact relation with the charge pattern on such insulating member, the improvement comprising:

an electromagnetic in said housing associated with said applicator member, for establishing when such electromagnet is energized, upstanding nap bristles on the applicator member to contact a charge pattern on such insulating member; and

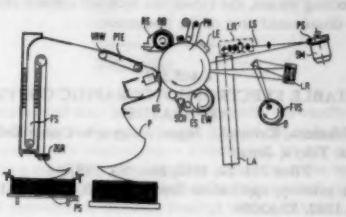
means for selectively (i) energizing said electromagnet to develop a selected electrostatic charge pattern with developer material attracted to the contacted charge pattern and (ii) deenergizing said electromagnet to avoid development of any non-selected electrostatic charge pattern.

4,465,357

DRIVE SYSTEM FOR A PHOTOCOPIER

Hubert Mugrauer, Poering, and Walter Kopp, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,341
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117278
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **10 Claims**



1. In a nonmechanical printing or copying device operating according to electrophotographic principles having a rotating photoconductor drum for intermediate storage of a latent charge image on the surface thereof, a means including a revolving slide scanning roller for directing a light beam onto said photoconductor drum surface for generating said latent charge image, a developer station having a rotating developer roller and a plurality of rotating mixing screws for applying toner powder to said latent charge image, a transfer station for transferring said image to paper having a transport unit for moving said paper, and a cleaning station having a rotating cleaning brush for removing excess toner from said photoconductor drum surface after transfer of said image to the paper, the improvement comprising:

a central drive system having a drive motor in driving engagement with each of said photoconductor drum, said slide scanning roller, said developer roller, said mixing screws, said paper transport unit and said cleaning brush for rotation thereof; and

said central drive system being subdivided into a main drive system for driving said photoconductor drum, said slide scanning roller, and said paper transport unit with a precise degree of synchronization among said drum, scanning roller and transport unit, and a subsystem for driving said cleaning brush, said developer roller and said mixing screws with a lower degree of synchronization among said brush, developer roller, and mixing screws.

4,465,358

IMAGE DENSITY DETECTING DEVICE FOR IMAGE FORMING APPARATUS

Kunihiko Miura, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 19, 1982, Ser. No. 379,947
Claims priority, application Japan, May 22, 1981, 56-77483
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **2 Claims**

1. An image density detecting device for an image forming apparatus of the type in which an image exposure is achieved by illuminating a document and guiding light reflected therefrom to a photosensitive medium, comprising:

(a) light diffusing means of a transparent material having a light receiving surface of a size corresponding to the illuminated area of the document for receiving light re-

flected from the entire illuminated area of the document and adapted to diffuse the received light; and

(b) light detecting means for detecting the intensity of light

diffused by said light diffusing means, said surface being inclined so that the further the inclined surface is from said detecting means, the closer the inclined surface comes to the illuminated area of the document.

4,465,359

PORTABLE ELECTROPHOTOGRAPHIC COPYING APPARATUS

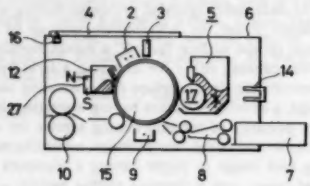
Kimio Nakahata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1982, Ser. No. 398,364

Claims priority, application Japan, Jul. 20, 1981, 56-114073; Jan. 29, 1982, 57-13080

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **11 Claims**



9. A portable electrophotographic copying apparatus, comprising:

an electrophotographic photosensitive member;

latent image forming means having a movable optical scanning member for scanning an original to form a latent image corresponding to the original on said photosensitive member;

developing means for developing the latent image;

a frame for supporting said photosensitive member, latent image forming means and developing means;

a grip provided at a side of said frame for carrying said apparatus; and

lock means for locking said optical scanning member at a predetermined position for preventing said optical scanning member from moving when said apparatus is being carried.

4,465,360

ELECTROPHOTOGRAPHIC COPYING MACHINE

Toshio Yamagishi; Hiroaki Uchiyama; Ikuo Itoh, and Yoshiaki Imanaka, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,811

Claims priority, application Japan, Mar. 31, 1981, 56-48692; Mar. 31, 1981, 56-48693

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **7 Claims**

1. An electrophotographic copying machine comprising in combination:

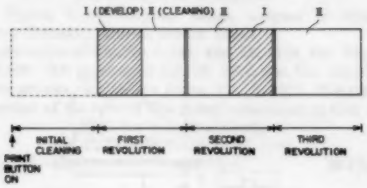
a photosensitive member rotatably mounted having a predetermined surface size;

drive means for rotating said photosensitive member at a preselected velocity;

a combined developing-cleaning magnetic brush element for selectively conducting a developing operation and a cleaning operation;

a copy sheet size detection unit for detecting the size of a copy sheet and developing a first detection signal when said copy sheet is greater than one half of said predetermined surface size of said photosensitive member, and developing a second detection signal when said copy sheet is equal to or less than one half of said predetermined surface size of said photosensitive member; and

control means for activating said combined developing-



cleaning magnetic brush element in a manner such that when said second detection signal is developed from said copy sheet size detection unit, during a first revolution of said photosensitive member, said combined developing-cleaning magnetic brush element conducts said developing operation onto a first half section of said photosensitive member and conducts said cleaning operation onto a second half section of said photosensitive member and during a second revolution of said photosensitive member said combined developing-cleaning magnetic brush element conducts said cleaning operation onto said first half section of said photosensitive member and conducts said developing operation onto said second half section of said photosensitive member.

4,465,361

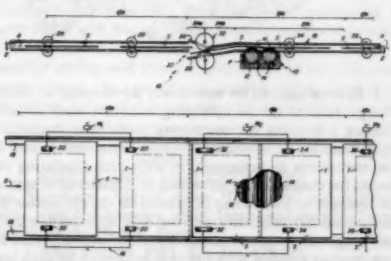
APPARATUS AND METHOD FOR DEVELOPING ELECTROGRAPHIC SHEETS

Stephen C. Rumsey, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,151

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **11 Claims**



1. In apparatus for developing electrostatic charge patterns on discrete electrographic sheets moving seriatim along a path in pattern-developing relation to a developer station having electroscopic marking particles, the improvement comprising:

means for overlapping the trail edge of a sheet and the lead edge of a successive sheet to form a shingled train of sheets; and

means for moving the shingled train of sheets in pattern-

developing relation to the marking particles to apply such particles to the charge patterns.

4,465,362

CLEANING DEVICE

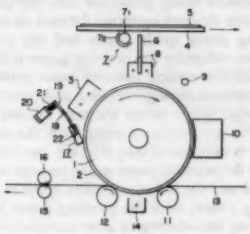
Hitoshi Tohma; Tomohiro Kimura, both of Kawasaki, and Hiroshi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

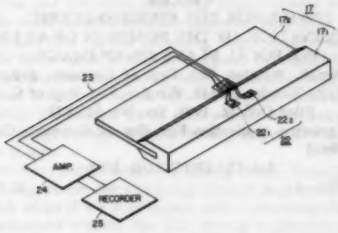
Filed Dec. 23, 1981, Ser. No. 333,884

Claims priority, application Japan, Dec. 26, 1980, 55-187168

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **21 Claims**





1. A cleaning device for removing residual on a surface of an image bearing member of an image formation aparatus, comprising:

a cleaning member held in pressure contact with the surface of the image bearing member; and

means for detecting the pressure contact condition of said cleaning member with respect to the surface of the image bearing member, said detecting means having a strain detecting element provided on said cleaning member; and

means, responsive to said detecting means, for indicating a desired adjustment of the pressure contact condition of said cleaning member with respect to the surface of the image bearing member.

4,465,363

CLEANING DEVICE FOR CLEANING THE PERIPHERAL SURFACE OF A PHOTOCONDUCTIVE DRUM IN AN ELECTROPHOTOGRAPHIC COPIER

Klaus Schmitt, Wiesbaden-Erbenheim, and Manfred Gehendges, Eltville, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,468

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147001; Dec. 14, 1981, 3149470

Int. Cl.³ G03G *21/00*

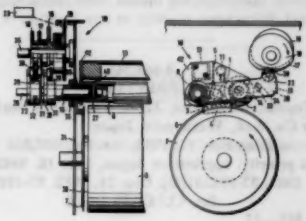
U.S. Cl. 355—15 **20 Claims**

1. A cleaning device for cleaning the peripheral surface of a photoconductive drum of an electrophotographic copier, comprising:

a cleaning roller;

a scraper including means for preventing liquid overflow;

a strip extending along the entire drum surface and positioned between said roller and said overflow prevention



means, said strip having a downwardly outwardly sloping surface from the central apex toward the ends; and

a lever device comprising a plurality of levers, one lever being separately positioned on a shaft from the remaining levers positioned on a surrounding sleeve, and a plurality of cam-disks in pressure contact with said levers, respectively for pivoting and positioning said roller and scraper.

4,465,364

ARRANGEMENT FOR PROJECTING AN IDENTIFYING IMAGE ON TO A FILM

Heinz Kröbel, Taufkirchen; Heinrich Färber, and Jürgen Müller, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

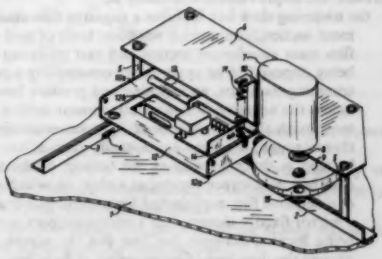
PCT No. PCT/EP81/00124, 371 Date Jul. 12, 1982, 102(e) Date Jul. 12, 1982, PCT Pub. No. WO82/01775, PCT Pub. Date May 27, 1982

PCT Filed Aug. 14, 1981, Ser. No. 403,611

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043067

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—40 **14 Claims**



1. An arrangement for forming an image on radiation-sensitive material, particularly for projecting data from a data carrier onto film, comprising:

(a) projecting means for projecting an image towards radiation-sensitive material accommodated by a receptacle which is in a predetermined position and has an opening for exposure of the radiation-sensitive material to radiation and a removable cover for the opening;

(b) engaging means movable between an engaged position in which said engaging means engages the cover of a receptacle in said predetermined position and a disengaged position, said engaging means being shiftable along a predetermined path while in said engaged position be-

tween a first position in which the cover of a receptacle in said predetermined position closes the opening of the receptacle and a second position in which the cover at least partially unblocks the opening; and

(c) actuating means for said engaging means, said actuating means including an actuating mechanism which is operable from the exterior of said arrangement and is arranged to move said engaging means from said engaged position to said disengaged position at any location of said path.

4,465,365

PRINTER

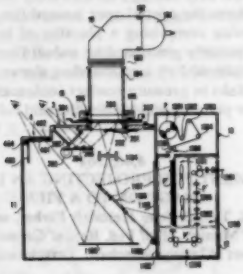
Seiichi Toyoda, Wakayama, Japan, assignor to Noritsu Kenkyu Center Co., Ltd., Wakayama, Japan

Filed Feb. 17, 1983, Ser. No. 467,334

Claims priority, application Japan, Feb. 18, 1982, 57-23649; Dec. 21, 1982, 57-192241[U]; Dec. 21, 1982, 57-192242[U]

Int. Cl.³ G03B *13/28*

U.S. Cl. 355—45 **6 Claims**



1. In a printer including a trimming dark box disposed below a light beam source, an exposing and printing dark box located behind said trimming dark box, a printing paper containing dark box located behind the trimming dark box and above said exposing and printing dark box, said printing paper containing dark box having a roll of printing paper carried on a support shaft, and a control box with at least an electric circuit incorporated therein for controlling a variety of operations of the printer, the improvement consisting in;

the trimming dark box includes a negative film mask attachment section, a trimming window, both of said negative film mask attachment section and said trimming window being disposed on an upper board constituting a part of the trimming dark box, an exposing and printing lens located below the negative film mask attachment section in alignment with the optical axis of light beam coming down therethrough, a screen horizontally held at the position located in the proximity of the bottom of the trimming dark box, said screen serving as a plane on which an image of a negative film is projected for trimming operation, and a mirror fixedly mounted on a mirror support, said mirror being located between the lens and the screen so as to change the direction of propagation of light beam toward the exposing and printing dark box and adapted to turn away from the optical axis of light beam to shut the exposing and printing dark box when trimming is to be effected, and

the exposing and printing dark box includes an exposing section and a transporting section by way of which the exposed printing paper is taken out from an exposing area in said exposing section, said exposing section essentially comprising a vertical printing paper guide plate, a pair of printing paper guide plates, a printing paper guide passage formed between said vertical printing paper guide plate and said pair of guide plates, a plurality of suction fans disposed behind the vertical printing paper guide plate and a guide plate actuating mechanism, said vertical printing paper guide plate having a large number of holes formed thereon for firmly holding the printing paper against the fore surface thereof under reduced pressure generated by said suction fans and including a plurality of driving rollers rotatably mounted thereon, while said pair of printing paper guide plates being adapted to turn about vertical support shafts located at both the side edge parts of the vertical printing paper guide plate to be opened toward the trimming dark box by means of said printing paper guide plate actuating mechanism and including a plurality of follower rollers rotatably mounted thereon at the position corresponding to that of said driving rollers on the vertical printing paper guide plate to cooperate with the latter, a part of both said driving rollers and said follower rollers being projected into the printing paper guide passage through openings formed on both the vertical printing paper guide plates and the printing paper guide plates, whereby the printing paper is firmly held in contact with the vertical printing paper guide plate under reduced pressure during exposing and printing while the printing paper guide plates are kept opened and the follower rollers are displaced away from the driving rollers whereas it is introduced into or taken out from the exposing area in the printing paper guide passage while they are kept closed and the follower rollers come in contact with the driving rollers with the printing paper held therebetween during introducing or after completion of exposing and printing of the printing paper.

4,465,366

DEVICE FOR THE PHOTOELECTRIC DETERMINATION OF THE POSITION OF AT LEAST ONE FOCAL PLANE OF AN IMAGE

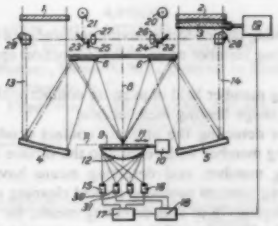
Horst Schmidt, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,122

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039425

Int. Cl.³ G01C *3/10, 3/08*

U.S. Cl. 356—1 **21 Claims**



1. An apparatus for photoelectrically determining the position of a focusing plane of an image comprising an optical correlator including an optical axis and an imaging system for imaging an object onto an imaging plane, at least one spatial frequency filter mounted in the vicinity of said image plane of said imaging system, a photoelectric receiver means responsive to light fluxes leaving said spatial frequency filter to generate electrical signals and means for processing said electrical signals,

said imaging system comprising a catadioptric optical imaging means having a beam path wherein said imaging plane comprises a focal plane of said catadioptric optical imaging means and wherein said spatial frequency filter is operable to jointly modulate light fluxes traversing different pupil regions of said catadioptric optical imaging means, and said electrical signals generated by said photoelectric receiver means are indicative of positions in said imaging plane,

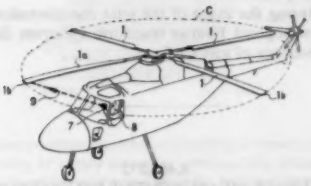
an optical sensor means, responsive to mechanical variations within said apparatus which affect said light fluxes, for generating electrical signals indicative of said mechanical variations.

4,465,367

PROCESS AND DEVICE FOR MEASURING AND ADJUSTING OUT-OF-TRACK DISTANCES OF HELICOPTER ROTOR BLADES

Michel Sabatier, La Motte, France, assignor to L'Etat Francais, Paris, France

Filed Nov. 3, 1981, Ser. No. 317,927
Int. Cl.³ G01M *1/00*; G01P *3/40*
U.S. Cl. 356—23 **12 Claims**



1. A device for measuring and adjusting the rotational plane of helicopter blades, comprising:

at least one reference reflecting target located adjacent to the outer tip of at least one reference helicopter blade and at least one regular reflecting target located adjacent to the outer tip of at least one regular helicopter blade;

a stroboscopic illuminating means for illuminating the reference reflecting target and the regular reflecting target while the blades are in rotary motion, thereby visually freezing an image of the reflecting targets at some position in space;

electronic control means for cueing the stroboscopic illuminating means, the electronic control means comprising;

a disk adapted for attachment with a rotational shaft of the helicopter blades, the disk having a plurality of radial magnetic extensions extending beyond the peripheral edge of the disk;

magnetic sensor means for detecting the radial magnetic extensions when rotating with the shaft of the helicopter blades, the magnetic sensor means being located adjacent to the disk;

electronic circuit means for converting an output of the magnetic sensor means into a signal for cueing the stroboscopic illuminating means to illuminate the reflecting targets and having an adjustment means for time-varying the cueing signal to the stroboscopic illuminating means.

4,465,368

EXPOSURE APPARATUS FOR PRODUCTION OF INTEGRATED CIRCUIT

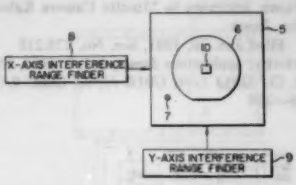
Toshio Matsuura, Koshigaya; Kyoichi Suwa, Kawasaki; Hisayuki Shimizu, Tokyo, and Akikazu Tanimoto, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,733
Claims priority, application Japan, Jan. 14, 1981, 56-4153
Int. Cl.³ G01J *1/42*
U.S. Cl. 356—218 **10 Claims**

1. In an exposure apparatus for production of integrated circuits including a stage on which a semiconductor wafer is placed for exposure by illumination light projecting means and means for two-dimensionally displacing said stage in a plane intersecting the illumination light at substantially right angles, an improvement comprising:

illumination detecting means having a photo reception surface; and

means for mounting said illumination detecting means on said stage in such manner that said photo reception surface lies substantially at the same level as the exposed surface



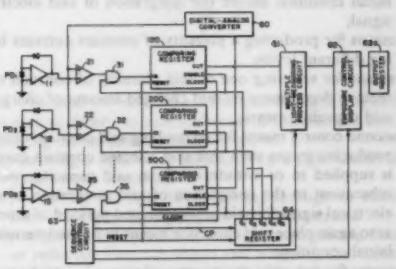
of said semiconductor wafer on said stage relative to said stage.

4,465,369

LIGHT MEASURING DEVICE

Takashi Saegusa, Sagamihara, and Osamu Maida, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 301,814
Claims priority, application Japan, Sep. 19, 1980, 55-130525
Int. Cl.³ G01J *1/42*
U.S. Cl. 356—222 **8 Claims**



1. A light measuring device capable of measuring an object field divided into a plurality of areas, comprising:

light sensitive means for photometering said plurality of areas individually for generating a corresponding plurality of photometering analog signals;

means for converting said photometering analog signals to corresponding digital outputs; and

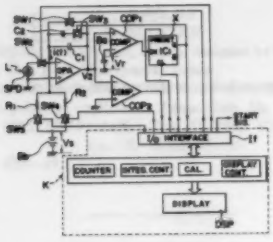
processing means responsive to said digital outputs for performing calculations dependent upon the brightness of said object field;

said converting means comprising a plurality of comparator means for comparing said photometering analog signals, respectively, with reference analog signals, a plurality of digital storage means for storing digital signals dependent upon outputs from said comparator means, respectively, a single device for producing said analog reference signals for all of said comparator means, and control means for controlling the storage of said digital signals in said digital storage means and for controlling the application of digital outputs from said digital storage means to said processing means.

4,465,370
LIGHT MEASURING DEVICE

Yoshio Yuasa, Kawachinagano, and Nobukazu Kawagoe, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1981, Ser. No. 279,215
Claims priority, application Japan, Jul. 1, 1980, 55-90323
Int. Cl.³ G01J *1/46*; G01R *17/02*; G08C *9/06*
U.S. Cl. 356—224 **35 Claims**



1. A light measuring device having a plurality of ranges for measuring light and comprising:

a light responsive means for receiving light and for producing an electrical signal as a function of the received light;

an integration means including a capacitor means for integrating said electrical signal so as to change the amount of charge stored in said capacitor means;

a first control means for controlling the integration means such that said electrical signal is integrated during a predetermined period of time;

a means for setting said capacitor means to a predetermined initial condition before the integration of said electrical signal;

a means for producing a plurality of constant currents having different levels;

a means for selecting one of said plurality of constant currents in dependence on said changed amount of charge in said capacitor means;

a second control means for controlling said constant current producing means such that said selected constant current is supplied to or withdrawn from said capacitor means subsequent to the completion of said integration of said electrical signal for said predetermined periodd of time; so as to again place said capacitor means to its predetermined initial condition;

a means for detecting the moment of time when said capacitor means again reaches said predetermined initial condition due to said selected constant current; and

a means for measuring the time interval from the moment of time when said constant current producing means starts to supply said selected constant current to said capacitor means to the moment of time when said detecting means detects that said capacitor means has again reached said predetermined initial condition.

4,465,371
OPTICAL FLAW DETECTION METHOD AND APPARATUS

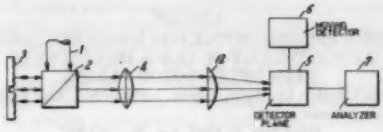
Benjamin J. Pernick, Hampton Bays, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 63,729, Aug. 6, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 347,075
The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.
Int. Cl.³ G01N *21/00, 21/55*
U.S. Cl. 356—237 **12 Claims**

1. A method for nondestructively detecting surface flaws in a specimen comprising the steps of:

(a) illuminating the surface of the specimen with a source of coherent light;

(b) forming on detecting means located in the far field a joint one-dimensional image and orthogonal Fourier transform



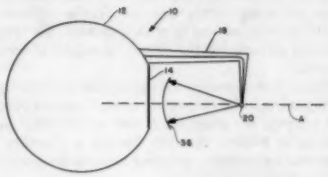
spectrum distribution of the light scattered by the surface of the specimen; and

(c) analyzing the shape of the joint one-dimensional image and orthogonal Fourier transform spectrum distribution for evidence of surface flaws.

4,465,372
TURBULENCE MEASUREMENT INTERFEROMETER APPARATUS

Joseph M. Geary, Edgewood, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 23, 1982, Ser. No. 422,429
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—359 **9 Claims**



1. Turbulence measurement interferometer apparatus, comprising:

(a) a station having an entrance pupil and optical means defining an optical axis extending through said pupil;

(b) an aerodynamically stable boom connected to said station and having an end point spaced from said station but disposed on said optical axis;

(c) a laser for generating a low power beam;

(d) means for splitting said beam into first and second portions;

(e) means for guiding said first beam portion along a first path to said boom end point from which a first spherical wavefront is launched toward said entrance pupil of said station through air turbulence between said boom end point and said station;

(f) said optical means for receiving a portion of said first spherical wavefront and transforming the same into a first collimated wavefront;

(g) means for guiding said second beam portion along a second reference path from which is launched a second reference spherical wavefront;

(h) means for receiving a portion of said second spherical wavefront and transforming the same into a second collimated reference wavefront;

(i) means for combining said first and second collimated wavefronts to form an interference pattern; and

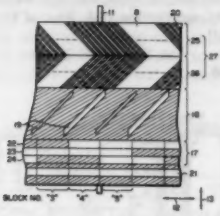
(j) means for recording said pattern.

4,465,373

ENCODER

Hiroshi Tamaki, Tokyo; Fumio Ohtomo, Kawagoe, and Kazuaki Kimura, Tokyo, all of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,772
Claims priority, application Japan, Jun. 17, 1980, 55-81697
Int. Cl.³ G01B 11/00; G01D 5/36
U.S. Cl. 356—374 21 Claims



1. An interpolation encoder comprising a sensor array having a plurality of sensor elements continuously arranged in an array, a code plate which has periodic lattice patterns including lattice pattern information "1" and "0" alternately and which is arranged in opposition to said sensor array, and an arithmetic unit for processing data detected by said sensor array from said lattice patterns of said code plate, characterized in that;

said lattice patterns are formed by inclined lattice patterns whose arrangement is inclined with respect to the arrangement of said sensor elements of said sensor array for providing detection sensitivity in two-dimensions for said sensor array,

whereby the number of the lattice patterns within a predetermined length of said code plate is slightly different from the number of said sensor elements of said sensor array within a length corresponding to said predetermined length so that a vernier relationship is established between the lattice patterns of said code plate and said sensor array, and

said arithemtic unit is provided with means for obtaining an intersected position of an output envelope of even-numbered elements and an output envelope of odd-numbered elements of said sensor array for obtaining an interpolated value within the width of the sensor element.

4,465,374

METHOD AND APPARATUS FOR DETERMINING DIMENSIONAL INFORMATION CONCERNING AN OBJECT

Timothy R. Pryor; Omer L. Hageniers; Walter J. Pastorius; Nicholas Liptay-Wagner, and Donald A. Clarke, all of Windsor, Canada, assignors to Diffracto Ltd., Windsor, Canada

Continuation of Ser. No. 234,729, Feb. 17, 1981, abandoned, which is a division of Ser. No. 15,792, Feb. 27, 1979, Pat. No. 4,305,661. This application Dec. 10, 1982, Ser. No. 448,820
Int. Cl.³ G01B 11/12, 11/24
U.S. Cl. 356—375 15 Claims

1. A method of determining the diameter of an object with a cylindrical surface comprising the steps of:

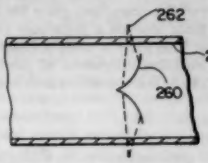
providing a ring of light around the cylindrical surface, said ring having a center located along the longitudinal axis of the cylindrical surface;

focusing said ring of light onto the cylindrical surface such that at least a portion of said ring of light is focused upon a small area of the cylindrical surface;

forming an image of incident light reflected from the cylindrical surface;

determining the longitudinal width of said image;

determining, from the determined width of said image, the location of said cylindrical surface; and



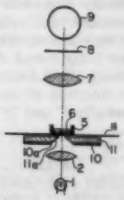
obtaining, from said surface location, the diameter of the cylindrical surface.

4,465,375

METHOD AND DEVICE FOR MEASURING A HALFTONE DOT AREA RATE OR A HALFTONE PICTURE DENSITY

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Apr. 30, 1981, Ser. No. 259,080
Claims priority, application Japan, May 1, 1980, 55-57082
Int. Cl.³ G01N 21/01, 21/55
U.S. Cl. 356—434 3 Claims



1. A method for measuring a halftone dot area rate or halftone picture density in a densitometer or halftone dot area rate measuring means comprising the steps of:

(a) emitting a light beam generated by a light source to an object to be measured;

(b) receiving the light beam passing through or reflected from the object by a photoelectric element; and

(c) weighting the intensity of the light beam passing through or reflected from the object and assigning the maximum value to correspond to the center of said object, the value of said assigned weight being reduced to zero at the outer periphery of said object, the weight assigned being proportional to the transmittance or reflectance of the object.

4,465,376

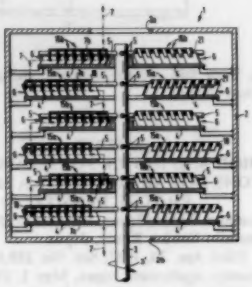
DEVICE FOR SUSPENDING A SCRAPER BLADE FOR THE DISPLACEMENT OF MATERIAL UPON A SURFACE

Siegfried Baumgartner, Munich, and Erwin Zaske, Pfaffenhofen, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,480
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026486
Int. Cl.³ F26B 11/00, 11/22
U.S. Cl. 366—139 5 Claims

1. In an apparatus for the treatment of a material on surfaces of a plurality of vertically spaced-apart horizontal annular plates wherein an upright shaft surrounded by said plates has at least one generally radial arm disposed above each plate for entraining a multiplicity of scrapers therealong upon being set in unidirectional rotation, each scraper comprising a holder

swingable on the respective arm and a blade mounted on the respective holder and having a working face inclined to the respective arm with a bottom edge adapted to ride along the upper surface of the respective plate for displacing said material on said plate toward a periphery thereof whereby said material passes from plate to plate in cascade, the improvement wherein, for enabling movement of the blade of each of said scrapers relative to the respective arm in a manner maintaining



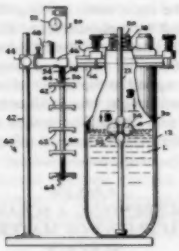
said bottom edge in full-length contact with the upper surface of the respective plate upon rotation of said shaft, each blade is unitary and rigid with the respective holder and each holder has a pair of downwardly bent eyes having holes through which the respective arm passed, the hole in the eye farther from said working face being round, the hole in the eye closer to said working face being elongated and inclined downwardly and forwardly in the direction of rotation of said shaft at an angle between substantially 5° and 25° to the vertical.

4,465,377

MAGNETIC STIRRER APPARATUS WITH GUIDED, FLOATING STIRRER

Norman A. de Bruyne, Princeton, N.J., assignor to Techne Corporation, Princeton, N.J.

Filed Jun. 7, 1983, Ser. No. 502,619
Int. Cl.³ B01F *13/08*
U.S. Cl. 366—273 **29 Claims**



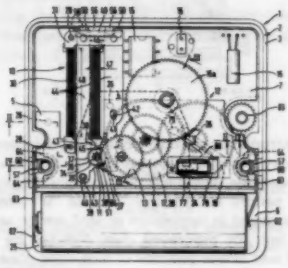
1. A magnetic stirrer apparatus comprising:
(a) a vessel having an opening at the upper part thereof,
(b) a closure for said opening,
(c) floating stirrer means in said vessel for stirring liquid in said vessel,
(d) magnetic means for causing rotation of said floating stirrer means comprising:
(i) means laterally of said vessel for generating a moving magnetic field, and
(ii) a magnet in said vessel drivingly connected to said stirrer means, and
(e) guide means for restricting movement of said floating stirrer means to rotary movement and to substantially vertical movement with change in the liquid level in said vessel.

4,465,378

CLOCK MOVEMENT

Roland Maurer; Robert Wolber, both of Lauterbach-Sulzbach; Walter Obergfell, and Hans Flaig, both of Schramberg, all of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,054
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 8136793[U]
Int. Cl.³ G04C *23/02*
U.S. Cl. 368—88 **13 Claims**



1. A clock movement comprising:
front and rear housing shells,
a support plate mounted within and between said shells,
a gear movement mounted on a rear side of said support plate and facing said rear shell,
a hands movement including a minute wheel and an hour wheel, said hands movement arranged on a front side of said support plate and being drivingly connected to said gear movement,
a circuit board connected to said support plate and comprising an electronic drive actuating circuit,
a motor comprising:
a stator sheet including means defining an opening for a rotor and being fastened in engaging relationship to a rear side of said support plate adjacent said opening-defining means, and
a coil bobbin mounted on said stator sheet and including a plurality of pins, said pins defining coil terminals and being soldered to a circuit of said circuit board,
a rotor disposed in said rotor opening and drivingly connected to said gear movement,
said circuit board being disposed in front of said support plate in spaced relationship therewith and being of arc-like configuration such that legs of the arc straddle said minute and hour wheels.

4,465,379

TEMPERATURE DETECTOR CIRCUIT FOR TIMEPIECE

Toshiyuki Misawa, and Tatsushi Asakawa, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

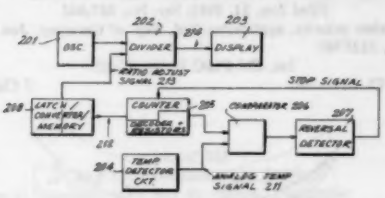
Filed May 22, 1980, Ser. No. 152,448
Claims priority, application Japan, May 23, 1979, 54-64151; Jun. 19, 1979, 54-77216; Sep. 28, 1979, 54-126100
Int. Cl.³ G04B *17/12*; H03L *1/00*
U.S. Cl. 368—202 **36 Claims**

1. A temperature detector circuit comprising:
comparator means having a first and second input and an output, a differential signal of one polarity across said inputs producing one state of signal at said output, a differential signal of the opposite polarity across said inputs producing an opposite state of signal at said output;

a power source;

a first resistance means including a first resistor connected across said power source, said first resistor being temperature insensitive, an output nodal point of said first resistance means being connected to said first input of said comparator means, said first resistance means including means for varying the voltage at said nodal point;

second resistance means including at least one second resistor connected across said power source, the value of said at least one second resistor at a given temperature being independent of applied voltage and directly related to the length of said at least one second resistor and the resistivity ρ of the material forming said at least one second resistor, and inversely proportional to the crossectional area thereof, a nodal point of said second resistance means



being connected to said second input of said comparator means, at least a portion of said at least one second resistor being temperature sensitive, said differential signal input to said comparator being responsive to temperature;

means for detecting a reversal in state at said comparator output, said means for detecting cooperating with said means for varying the voltage at said output nodal point of said first resistance means and terminating said variations of said voltage;

temperature signal output means for indicating the condition at said output nodal point when said variations are terminated;

different temperatures of said second resistance means resulting in different temperature signals from said temperature signal output means, said signals being indicative of said temperature at said second resistance means.

4,465,380

ELECTRONIC TIMEPIECE

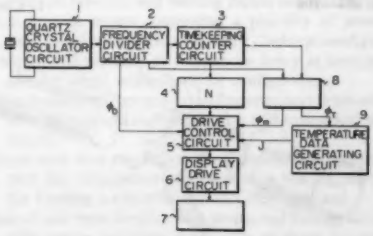
Mitsuhiro Murata, and Tomoko Tsunesumi, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,693

Claims priority, application Japan, Jan. 8, 1982, 57-1082[U]

Int. Cl.³ G04B *17/20*; G02F *1/17*

U.S. Cl. 368—202 **3 Claims**



1. An electronic timepiece, comprising:

timekeeping circuit means for generating timekeeping signals representing at least hours time information;

drive circuit means responsive to said timekeeping signals for selectively generating display write drive signals and display erase drive signals in response to said timekeeping signals;

an electro-chromic display device comprising a plurality of display elements, responsive to said display write drive signals for setting specific ones of said display elements into a colored state and responsive to said display erase drive signals for setting specific ones of said display elements into a non-colored state, for thereby displaying time information in accordance with said timekeeping signals;

temperature monitor circuit means for sensing the ambient operating temperature of said electronic timepiece, and for generating temperature signals selectively indicating that said ambient temperature is above a predetermined upper limit temperature and below said upper limit temperature; and

control circuit means responsive to said temperature signals for enabling input of said display write drive signals to said electro-chromic display device when said ambient temperature is below said upper limit temperature and for inhibiting input of said display write drive signals to said electro-chromic display device when said ambient temperature is above said upper limit temperature.

4,465,381

TIMEPIECE WITH MODULAR ALARM ACTIVATING MECHANISM

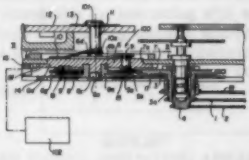
Willy Cleusix, Le Landeron, Switzerland, assignor to Ebauches Electroniques S. A., Marin, Switzerland

Filed Feb. 26, 1982, Ser. No. 352,622

Claims priority, application Switzerland, Feb. 26, 1981, 1319/81

Int. Cl.³ G04C *21/16*

U.S. Cl. 368—250 **13 Claims**



1. A timepiece comprising:

a framework;

means, rotatably mounted on said framework, for displaying the present time;

movement means mounted on said framework for actuating said means for displaying;

modular alarm activating means, rotatably mounted on but removable as a module from said framework, for closing an electric contact at a time which can be set in advance, said modular activating means comprising a first support member mounted on said framework for rotation about a first axis, a first electrical contact member mounted on said first support member for rotation therewith about said first axis, a second support member mounted on and about said first support member for rotation about said first axis relative to said first support member, said second support member being operatively connected to said movement means, a second electrical contact member mounted on said second support member for rotation therewith about

said first axis, said second contact member being in position to be rotated into contact with said first contact member to activate an alarm and means for inseparably holding said second support member on said first support member to permit removal of said alarm activating means as a module from said framework; and

means mounted on said framework for rotating said first support member of said modular activating means to position said first contact member at a location corresponding to a desired alarm time,

whereby said first and second contact members are brought into contact when said support member has been rotated by said movement means until said second contact member reaches said location corresponding to said desired alarm time.

4,465,382

METHOD OF AND AN APPARATUS FOR MEASURING SURFACE TEMPERATURE AND EMMISSIVITY OF A HEATED MATERIAL

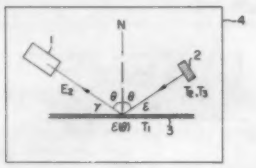
Tohru Iuchi, Kawasaki; Kunitoshi Watanabe, Fukuoka; Toshihiko Shibata, Tokai, and Tetsuro Kawamura, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,727

Claims priority, application Japan, Mar. 4, 1980, 55-27108; Jul. 11, 1980, 55-94594

Int. Cl.³ G01J 5/10; G01K 13/06

U.S. Cl. 374—9 **15 Claims**



1. A method for measuring the surface temperature T_1 and emissivity $\epsilon(\theta)$ at an angle θ, of an object being heated in a furnace, the surface of said object being non-specularly reflecting, said furnace having a wall temperature T_4, said method comprising the steps of:

determining a diffusely reflecting factor p for the material and surface roughness of said object where said roughness inhibits accurate measurement of T_1 should specularity of the surface be assumed, to account for the non-specularly reflecting condition of said surface;

measuring T_4;

positioning a radiometer and at least one black body radiator specularly and symmetrically at angles θ with respect to a normal to said surface of said object;

with said black body radiator at a temperature T_2, emitting radiant energy $E_b(T_2)$ toward said surface;

with said radiometer, detecting radiant energy E_2 as a result of energy emitted by and reflected from said surface;

with said black body radiator at a temperature $T_3 \neq T_2$, emitting radiant energy $E_b(T_3)$ toward said surface;

with said radiometer, detecting radiant energy E_3 as a result of energy emitted by and reflected from said surface;

determining $\epsilon(\theta)$ in accordance with the relationships

$$\epsilon(\theta) = 1 - \frac{E_2 - E_3}{(1-p)(E_b(T_2) - E_b(T_3))}; \text{ and}$$

determining T_1 in accordance with the relationship

$$E_b(T_1) = \frac{E_3}{\epsilon(\theta)} - \frac{1-\epsilon(\theta)}{\epsilon(\theta)} \cdot (1-p) \cdot E_b(T_3) - \frac{1-\epsilon(\theta)}{\epsilon(\theta)} \cdot p \cdot E_b(T_4).$$

4,465,383

HYDRODYNAMIC BEARING

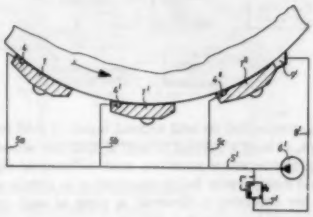
Otto Heinemann, Ennigerloh; Helmut Lucke, Beckum; Hubert Grothaus, Iburg-Glane; Helmut Krumme, Wadersloh; Leonhard Linzel, Oelde; Werner Schossler, Ahlen, and Burkhard Heiringhoff, Oelde, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,442

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125740

Int. Cl.³ F16C 32/06, 37/00

U.S. Cl. 384—100 **7 Claims**



1. A hydrodynamic bearing comprising at least one fixed bearing element having a bearing surface adapted to support a rotatable member, said bearing surface having an inlet zone and an outlet zone spaced from said inlet zone in the direction of rotation of said rotatable member, said bearing surface having a groove therein adjacent said inlet zone; means for supplying oil to said groove; and pressure limiting valve means in communication with said supply means for limiting the pressure of oil at said inlet zone, said pressure limiting valve means having an outlet communicating with said outlet zone.

4,465,384

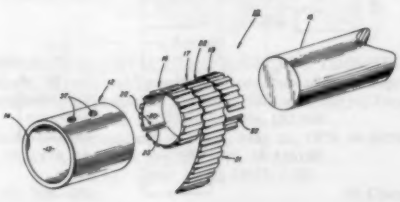
HIGH LOAD, WHIRL FREE, FOIL JOURNAL BEARING

Hooshang Heshmat, Granger, Ind.; Wilbur Shapiro, and Stanley Gray, both of Schenectady, N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,218

Int. Cl.³ F16C 32/06

U.S. Cl. 384—106 **11 Claims**



1. A compliant hydrodynamic fluid film bearing assembly that includes

an elongated sleeve housing a rotor shaft to provide a gap between the inside wall of the sleeve and the outer periphery of the shaft,

a plurality of independent spaced apart foil bearing units that are axially aligned within the gap in a non-contiguous relationahip, each of said bearing units including a foil sandwich having a support sheet facing the shaft and a superimposed bump foil positioned between the support sheet and inside wall of the sleeve, each sandwich being secured at one end to the said inside wall of the sleeve by an axially disposed joint with the trailing section of the sandwich circumferentially wrapped about the shaft,

said axially disposed joints being spaced apart axially to provide a relief channel between each of the adjacent bearing units, said channel extending from the surface of the shaft to the inside wall of the sleeve and the joints of adjacent bearing units being angularly displaced one from the other about the circumference of the sleeve whereby the joints are staggered about the periphery of the sleeve.

4,465,385

FLEXIBLE SPRING BEARING

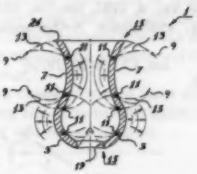
Hans U. Pannwitz, P.O. Box 67, Odessa, Fla. 33556

Continuation of Ser. No. 33,200, Apr. 25, 1979, Pat. No. 4,239,301, which is a continuation-in-part of Ser. No. 834,903, Sep. 20, 1977, Pat. No. 4,175,804. This application Nov. 16, 1980, Ser. No. 205,109

The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.

Int. Cl.³ F16C *33/74*

U.S. Cl. 384—138 **1 Claim**



1. An improved bearing, comprising in combination:

a substantially cylindrical configuration having an aperture therein;

a main bearing race disposed at an end portion of said cylindrical configuration;

a thrust race disposed adjacent to said main bearing race;

bearing means being part of said main bearing race enabling rotation between said bearing means and said thrust race;

said bearing means comprising a plurality of protrusions established concentric with said cylindrical configuration;

each of said plurality of protrusions being at least partially annular about said cylindrical configuration;

main bearing skirt means extending annularly from said main bearing race and concentric with said cylindrical configuration;

thrust race skirt means extending annularly from said thrust race for cooperation with said main bearing skirt means for forming a rotatable seal therebetween; and

one of said main bearing skirt means and said thrust bearing skirt means including a plurality of skirts for receiving therebetween in a sliding engagement the other of said main bearing skirt means and said thrust bearing skirt means thereby creating a labyrinth to prevent the movement of matter between the interior and the exterior of the bearing.

4,465,386

IMPACT TYPE DOT PRINTER

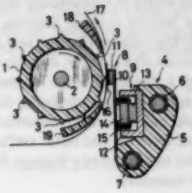
Tatsuo Shimada; Yoshinori Chida, and Satoru Tada, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,922

Claims priority, application Japan, Sep. 17, 1979, 54-119506; Jun. 30, 1980, 55-88937

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—121 **3 Claims**



1. In an impact type dot printer, the combination comprising: a rotary platen having on its outer peripheral surface a plurality of projections extending substantially parallel to the axis of said rotary platen; a printing head movable in a direction parallel to the axis of said rotary platen, said printing head including a single actuatable printing hammer; and electromagnetic driving means for driving said printing hammer during a printing operation to collide with one of said projections, said electromagnetic driving means comprising a center yoke, an outer yoke arranged to surround said center yoke, a permanent magnet for magnetizing said center and outer yokes, an annular magnetic air gap formed between said center and outer yokes, and a cylindrical moving coil disposed in said annular magnetic air gap and energizable for interacting with said magnetized yokes to actuate said printing hammer; said printing hammer comprising a cantilevered leaf spring carrying thereon said moving coil and having a striking member connected at the free end thereof.

4,465,387

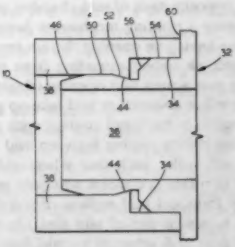
DAISY WHEEL MOUNTING APPARATUS

Alan F. Seitz, New Hartford, and Karl G. Seitz, Goshen, both of Conn., assignors to Data Motion, Inc., Torrington, Conn.

Filed Sep. 30, 1982, Ser. No. 429,161

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—175 **7 Claims**



1. An integrally formed, one piece synthetic resin print wheel of the daisy wheel type adapted for mounting upon the arbor assembly of a printer, said print wheel having

a generally cylindrical hub having axially spaced ends and inner and outer surfaces of generally circular cross section;

a generally annular support disc about one of said axial ends of said hub and having an inner surface with an inner diameter greater than the diameter of said outer surface of

said one end of said hub to define a generally annular space therebetween;

a multiplicity of spaced webs disposed in said generally annular space and extending radially inwardly between the inner surface of said annular disc to the outer surface of said hub to secure in assembly said support disc and said hub; and

a multiplicity of flexible character arms extending radially outwardly from the outer periphery of said support disc and about the entire circumference thereof, said character arms having indicia formed thereon adjacent the outer ends thereof; the inner surface of said hub having a multiplicity of spaced ribs thereon extending inwardly thereof and defining a circle of lesser diameter than the inner diameter of said hub, said ribs being disposed on the inner surface of said hub in a circumferentially spaced relationship from said webs on said outer surface, said ribs thereby being adapted to frictionally engage the shaft of the associated arbor assembly.

4,465,388

INK RIBBON CARTRIDGE PINCH ROLLER

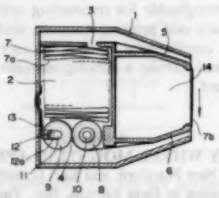
Shigeru Iwasawa, Kanagawa, Japan, assignor to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Aug. 20, 1982, Ser. No. 409,843

Claims priority, application Japan, Sep. 2, 1981, 56-130668[U]

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **5 Claims**



1. An ink ribbon cartridge comprising in combination: a cartridge housing defining a first chamber therein for storing in a folded manner an endless ink ribbon having supply and take-up ports at opposite ends of said chamber and a second chamber for housing a printing mechanism juxtapositioned to said first chamber having an opening therein remote from said first chamber, said ink ribbon extending from said supply port to said take-up port across said opening of said second chamber;

a take-up roller disposed at said take-up port; and

a pinch roller in frictional contact with said take-up roller with said ribbon passing between said take-up roller and said pinch roller such that when said take-up roller is driven to rotate in concert with said pinch roller to frictionally transport said endless ribbon therebetween, said ribbon is drawn out of said first chamber through said supply port and returned to said first chamber through said take-up port, characterized in that at least one of said take-up roller and pinch roller consists of a compressed body of flexible polyurethane foam, having a cell membrane-free three-dimensional reticulated structure, said compressed body being prepared by compressing said foam having 40 to 90 cells per inch at a compression ratio of 75 to 95% with the direction of the compression of said compressed body being aligned with the axis of the roller, said compressed body having a density of 0.15 to 0.65 g/cm³ and a Shore A hardness of 10 to 60.

4,465,389

THERMOSENSITIVE INKED ELEMENT FOR NON-IMPACT PRINTERS

Franco Knirsch, Banchette, and Giovanni Gianolini, Lozza, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Sep. 13, 1982, Ser. No. 417,571

Claims priority, application Italy, Sep. 21, 1981, 68228 A/81

Int. Cl.³ B41J *31/00*; B41M *5/26*

U.S. Cl. 400—241.1 **4 Claims**

1. A thermosensitive inked element for a non-impact printer of the thermal type, comprising a base support of plastics material having a thickness comprised between 7 and 20μ, said base support being coated on one side with a layer 2 to 4μ thick of a mixture transferable from said base support to a printing paper when said inked element is subject to heat and is pressed against said paper, said mixture comprising a pigment or dye, a binder including one or more hydrocarbon resins with a softening point around 100° C., and a plasticizer, characterized in that said binder includes a softener constituted by one or more natural or synthetic waxes and esters of said waxes having a low melting point and in a proportion ranging between 20 and 50% of the mixture so as to lower the melting point of the mixture and to improve its penetration in said paper, said plasticizer being in a proportion not exceeding 5% of said mixture.

4,465,390

PRINTER COMPRISING A NOISE-SEALING PAPER-TRANSPORT ROLLER

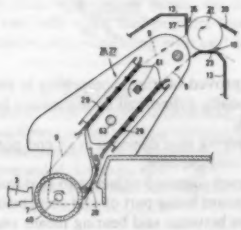
Hendrik J. Zander, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,708

Claims priority, application Netherlands, Apr. 19, 1982, 8201612

Int. Cl.³ B41J *29/08*

U.S. Cl. 400—689 **8 Claims**



1. A printer comprising a printer housing, at least one opening in the housing for passage into and out of the housing of a paper strip to be printed upon, a paper transport device for transporting the paper strip into the housing to a printing area and then out of the housing, and a noise barrier,

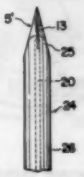
wherein said noise barrier comprises a roller mounted for rotation, said roller being located so as to substantially close said at least one opening, the paper strip entering said housing by passing between and in contact with the roller and a first wall of the housing at one side of said at least one opening and said paper strip exiting from said housing by passing between and in contact with the roller and a second wall of the housing at the opposite side of said at least one opening from which said paper strip entered said housing, and means for biasing said roller toward the first and second walls.

4,465,391

PEN NIB CONSTRUCTION

Tetsuo Kinjo, Tokyo, Japan, assignor to Shizuo Yamanaka, Tokyo, Japan

Continuation of Ser. No. 132,570, Mar. 21, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,971
Claims priority, application Japan, Mar. 29, 1979, 54-36202
Int. Cl.³ B43K *1/00*
U.S. Cl. 401—230 **1 Claim**



1. A pen having a pointed pen nib and pen holder connected to a main ink chamber characterized by

ink feeder tongues connecting said main ink chamber and in contact with the outer surface of the pen nib,

the pen nib including

projecting elements disposed outward at angular distances of about 120° each,

long slits or splits and short notches or chinks disposed alternately and at equal angular distances provided on said pen nib at its pointed end,

an auxiliary ink chamber formed in said pen nib near its pointed end,

said feeder tongues located between and adjacent the outside of two of said projecting elements, at least one of said feeder tongues being formed on its inner surface with a channel or groove one end of which reaches the main ink chamber providing a passage from the main ink chamber to at least one of said slits or splits and then to said auxiliary ink chamber,

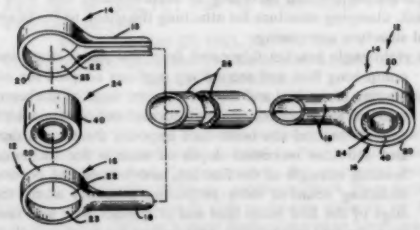
said auxiliary ink chamber spaced from said main chamber along said long slit or splits and spaced forwardly from said groove of said feeder tongues.

4,465,392

THERMALLY ISOLATED STRUCTURAL SUPPORT LINK

Clifford H. Lang, Long Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,861
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—24 **9 Claims**



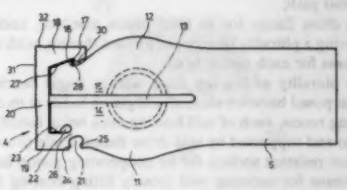
1. A thermally isolated structural support link comprising a tube-like support element having a hollow interior, at least one bearing housing, said bearing housing being made of a pair of casings, each of said bearing casings being formed of substantially identical configurations and having a semi-cylindrically-shaped rod at one end thereof and a bearing mount at the other end thereof, a spherical monoball bearing being interposed between said bearing mounts and affixed therebetween by an extremely strong adhesive, said semi-cylindrically-shaped rods being secured together to form a cylindrically-shaped rod, said cylindrically-shaped rod being positioned within one end of said hollow tube-like support element and affixed therein by an extremely strong adhesive, and said tube-like element, said bearing housing and said adhesive being made of a material having excellent thermal isolation properties whereby said support link is capable of thermally isolating as well as structurally interconnecting together the components of an assembly.

4,465,393

PLASTIC BALL SOCKET EXTRUDED IN ONE PIECE FOR A BALL-AND-SOCKET JOINT

Klaus Dieckmann, Göppingen-Schopflenberg, Fed. Rep. of Germany, assignor to Springfix-Befestigungstechnik GmbH, Salach, Fed. Rep. of Germany

Filed Aug. 25, 1981, Ser. No. 295,991
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034080; May 13, 1981, 3119061
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—76 **10 Claims**



1. A ball socket of plastic extruded in one piece for a ball and socket joint and having a shaft and a ball end, said joint having an axis which in a standard position is lateral to the shaft, in which the ball socket is divided by a slot extending into the area of its shaft, and in which a cover-shaped locking part is provided in the region of an open end of the slot to hold legs of the ball socket together, said part including two side sections and a yoke part connecting the two side sections with each other, in which one side section has a projection fitting over a lip arranged on the one leg when said locking part holds the two legs together, and in which a free end of the other side section is connected with the other leg via an elastic area forming a hinge strip, characterized by providing in the region of the hinge strip (26) at that side pointed away from slot (13) a recess (21) opening toward the outside, the edges (24, 25) of which leading outward and being a distance from each other to form stops limiting an aperture angle of locking part (4) starting from that position in which locking part (4) holds the two leg end positions (14, 15) together, and being further characterized by providing in an area of the hinge strip (26) at the side opposite the recess (21) a further recess (22) projecting into the other leg end portion (14), said additional recess bordering a surface (23) toward the end of the other leg end portion (14) with which surface the inner wall of the other side section (19) is flush when the locking part (4) holds the two leg end portions (14, 15) together.

4,465,394

BALL-JOINTED BEARING ARRANGEMENT OF THE PISTON HEADS IN AN AXIAL PISTON MACHINE

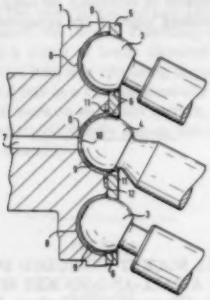
Heinz Berthold, Bildechingen, Fed. Rep. of Germany, assignor to Brueninghaus Hydraulik GmbH, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 283,834

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027541

Int. Cl.³ F01B *13/04*

U.S. Cl. 403—122 **4 Claims**



1. A bearing arrangement for a drive flange in an axial piston machine, said arrangement comprising:

(a) a plurality of pistons and piston heads mounted in an axial piston machine, said plurality of pistons defining a first rotational axis, a rotational path about said axis, and a plurality of reciprocating axes which intersect said rotational path;

(b) a drive flange for an axial pistor machine, said flange having a plurality of recesses formed therein, with a single recess for each piston head;

(c) a plurality of bearing cups, with a single bearing cup interposed between each of said piston heads at its cooperating recess, each of said bearing cups being loosely fitted into and supported by said drive flange while providing a wear resistant surface for its cooperating piston heads;

(d) means for securing said loosely fitting bearing cups in said recesses and counteracting rotational forces imparted to said cups by said piston, said means including a first and second opposed protuberance for each bearing, with said protuberances being aligned along a pair of cords which intersect the rotational path defined by the rotation of said piston heads, said means also including a plurality of grooves formed in said drive flange for receiving each of said protuberances;

4,465,395

POLYGON CONNECTION OF A HUB WITH A SHAFT

Ralph Mullenberg, Im Wiesengrund 6, 4048 Grevenbroich 12, Fed. Rep. of Germany

Division of Ser. No. 171,484, Jul. 23, 1980, Pat. No. 4,294,562. This application Jul. 2, 1981, Ser. No. 280,110

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929908

Int. Cl.³ F16D *1/08*

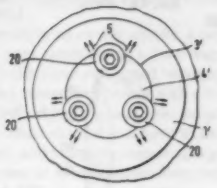
U.S. Cl. 403—356 **8 Claims**

1. A connection for joining a hub with a shaft, said hub and shaft each having an axis, the shaft having a circumference, the connection comprising:

a bore of circular cross section in the hub;

a joining portion of circular cross section, which joining portion constitutes part of the shaft, said joining portion having a circumference; said joining portion of said shaft fitting within said bore of said hub, said circular cross sections of said bore and shaft joining portion being taken in planes normal to the axes of the hub and shaft;

a plurality of fasteners disposed in said joining portion of said shaft, said fasteners being disposed in parallel relationship to the axis of the shaft, each fastener having a generally cylindrical configuration, each said fastener having a



longitudinal axis located radially within said circumference of said joining portion of said shaft, each said fastener including means for effecting radial expansion thereof, each said fastener, overall, being substantially symmetrical with respect to any plane which is coextensive with the longitudinal axis of said fastener.

4,465,396

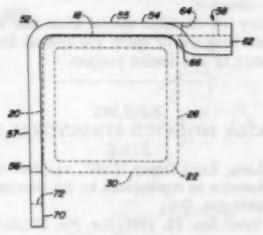
SHANK CLAMP

Harry M. Meinert, Urbandale, and John D. Sundberg, Madrid, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 28, 1982, Ser. No. 425,778

Int. Cl.³ F16B *9/02*

U.S. Cl. 403—395 **8 Claims**



4. In an implement having a beam with a generally rectangular cross section and including an earthworking tool with a shank, clamping structure for attaching the shank to the beam, said structure comprising:

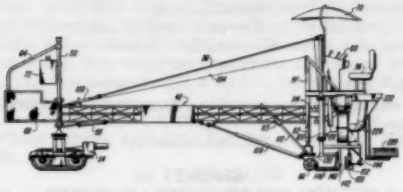
a right-angle bracket fabricated from flat metal stock and comprising first and second leg portions adapted for extending along first and second adjacent faces of the beam, said first leg portion including a formed end portion which extends beyond the beam face opposite the second face and provides increased depth of section for increased bending strength of the first leg, said formed end portion including rounded sides projecting inwardly along the edge of the first beam face and in contact with said face opposite said second face, said second leg portion including shank positioning means for supporting the shank adjacent the beam face opposite the first face and generally parallel to the first leg, and means for urging the rounded sides inwardly against the edge of the first beam face to prevent rotation of the bracket on the beam.

4,465,397

TRACK SURFACE LAYING

Edmund D. Hollon, 130 Frontier Ave., Douglas, Wyo. 82633, and Blake D. Hollon, 831 Grant St., No. 3, Douglas, Wyo. 82633

Filed Aug. 10, 1981, Ser. No. 291,319
Int. Cl.³ E01C *19/22*
U.S. Cl. 404—84 23 Claims



3. A machine for laying a resilient track surface material on a substrate which varies in elevation non-uniformly across its width, comprising:

an elongated frame of a length sufficient to span a plurality of successive lanes of a running track;

a plurality of successively-hinged individually-articulatable platens depending from and distributed along said frame, each platen having a length corresponding to the width of a respective one of said lanes;

means included individually with respect to each of said platens for enabling the application of pressure on said material toward the underlying substrate of said track, while effecting said pressure applied over each of said lanes in an amount which establishes a thickness of said layer that is substantially the same in each of said lanes;

means coupled to said frame for reciprocating said platens with linear motion in a direction laterally across said track to smear said material and form a bonded layer of said material which exhibits a continuous upper surface across said lanes but which also is planar across each individual one of said lanes;

and means coupled to said frame for moving said machine along said track.

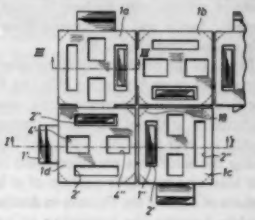
4,465,398

REVETMENT FOR PROTECTING THE INCLINED SURFACES OF BEACHES, SHORES, RIVERS OR CHANNELS, AND OF STRUCTURES SUCH AS MOLES, DIKES OR CHANNEL WALLS, LOCATED IN THESE PLACES, AGAINST EROSION BY WAVES AND FLOWING WATER

Poul N. Knudsen, Tagensvej 83d, Copenhagen, Denmark DK-2200

PCT No. PCT/DK81/00057, 371 Date Jan. 18, 1982, 102(e) Date Jan. 18, 1982, PCT Pub. No. WO81/03512, PCT Pub. Date Dec. 10, 1981
PCT Filed May 27, 1981, Ser. No. 341,991
Claims priority, application Denmark, Jun. 2, 1980, 2371/80
Int. Cl.³ E02B *3/12*
U.S. Cl. 405—16 12 Claims

1. A revetment for protecting the inclined surfaces of beaches, shores, rivers or channels and of structures, such as moles, dikes or channel walls, located in these places against erosion by waves and flowing water, the revetment being formed by a plurality of heavy, relatively thick plate bodies (1*a*–1*d*) located side by side and preferably directly on the inclined surface (15), each plate body comprising hinge members (1',1'') and hinge eye portions (2'2'') for a flexible securing of said plate body to the adjacent plate bodies (1*c*), the improvement comprising the hinge members (1'1'') as well as the hinge eye portions (2'2'') being relatively large compared with the plate body (1*a*–1*d*), said hinge members and hinge eye portions being of the same material as the plate body and casted integrally with said plate body, said hinge member (1',1'') being located at a first pair of opposite ends of said plate body, the hinge eye portions when meshing with the hinge



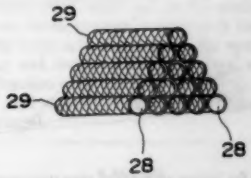
members on the adjacent plate bodies allowing an essential water penetration, and a plurality of substantially perpendicular water penetration holes (4',4'') being located in the plate body.

4,465,399

ARTIFICIAL REEF ASSEMBLY CONSTRUCTION AND A METHOD

Kenji Kikuzawa, and Shozo Akasaka, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 190,055, Sep. 23, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,186
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—32 3 Claims



1. A method for floating an artificial reef assembly on the sea by means of floaters releasably secured thereinto, transporting the artificial reef assembly to a predetermined location, submerging the same beneath the sea and recovering the floaters which comprises:

releasably fitting to an artificial reef assembly a predetermined number of floaters each comprising a body casing having an inner chamber fluid-tightly partitioned by means of at least one partition wall to have a plurality of air chambers,

at least one of said plurality of air chambers having at least one openable portion,

said floaters each having said plurality of air chambers filled with air,

said artificial reef assembly comprising a plurality of artificial reef units each comprising a hollow structure having at one end thereof a first opening and at the other end thereof a second opening and having a peripheral framework extending from the circumference of said first opening to the circumference of said second opening, said peripheral framework comprising a plurality of first fiber-reinforced plastic bands wound spirally about an axis of the hollow structure from said first opening to said second opening at an oblique angle with the axis to have a plurality of phases of the number corresponding to the number of the first fiber-reinforced plastic bands and a plurality of second fiber-reinforced plastic bands wound spirally

about the axis in a direction opposite to said first fiber-reinforced plastic bands to have a plurality of phases of the number corresponding to the number of the second fiber-reinforced plastic bands, thereby forming lattice pattern windows respectively defined by said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands intersecting therewith,

the releasable fitting of the predetermined number of floaters to the artificial reef assembly being effected by securely inserting the floaters into a corresponding number of the hollow structures of artificial reef units, respectively,

floating said artificial reef assembly with said floater on the sea and towing the same to a predetermined location,

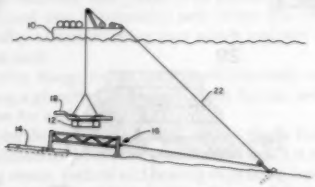
opening said at least one openable portion of at least one of the air chambers of each of the floaters to discharge the air therefrom while keeping the remaining at least one air chamber in the air-filled state, causing the floaters to be released out of the hollow structures of reef units of the artificial reef assembly whereby the artificial reef assembly is submerged beneath the sea, leaving the floaters on the sea, and recovering the floaters left afloat on the sea.

4,465,400

METHOD AND MEANS FOR LAYING AN UNDERWATER PIPELINE

Robert A. Adams, Sumner, Wash., assignor to Guy F. Atkinson Company, San Francisco, Calif.

Filed Dec. 30, 1981, Ser. No. 335,811
Int. Cl.³ F16L *1/04*
U.S. Cl. 405—170 **12 Claims**



1. Apparatus for laying sections of pipe underwater comprising

pipe support means including a longitudinal portion for positioning above a pipe section and fastening means for fastening a section of pipe to said longitudinal portion, and

a support frame for positioning underwater generally about the location for a section of pipe, said support frame including means for supportably receiving said pipe support means and including first and second transverse members each having a saddle means for receiving opposing ends of said longitudinal portion.

4,465,401

MINIMIZING SUBSIDENCE EFFECTS DURING PRODUCTION OF COAL IN SITU

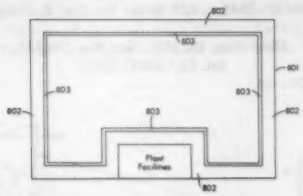
Xerxes T. Stoddard, Denver; Vesper A. Vaseen, Wheat Ridge, and Ruel C. Terry, Denver, all of Colo., assignors to In Situ Technology, Inc., Golden, Colo.

Division of Ser. No. 273,378, Jun. 15, 1981. This application Apr. 25, 1983, Ser. No. 488,065
Int. Cl.³ E21F *17/00*
U.S. Cl. 405—258 **2 Claims**

1. A method of limiting the ground surface effects of subsidence draw on surface facilities used in the production of coal in situ, comprising the steps of

establishing the outer and inner limits of a barrier pillar within the perimeter of the project area, then

digging a subsidence draw protective trench within the periphery of the inner limits of the barrier pillar to a depth corresponding to the lowermost portion of the foundations for structures located within the barrier pillar area,



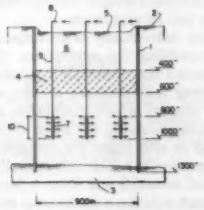
with the resultant providing a discontinuity in the surface rock.

4,465,402

METHOD FOR REMOVING UNDESIRED COMPONENTS FROM THE SOIL

Berend P. ter Meulen, Loenen, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Feb. 19, 1982, Ser. No. 350,349
Int. Cl.³ C09K *17/00*
U.S. Cl. 405—264 **11 Claims**



1. A method for removing undesired components from the soil comprising:

screening adjacent soil from contaminated soil having the undesired components therein,

supplying an extracting agent, suitable for removing the undesired components, to the soil at a level above the contaminated soil,

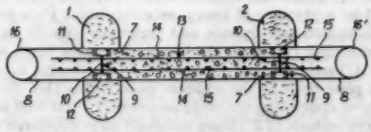
sucking up the extracted agent having the undesired components therein from the soil at a level below the contaminated soil.

4,465,403

METHOD OF CONSTRUCTING POURED-CONCRETE WALL PANELS AND WALL THUS OBTAINED

Jean-Pierre Schreiber, Mareil sur Mauldre, and Christian Vial, Sucy en Brie, both of France, assignors to Soletanche, Nanterre, France

Filed Dec. 28, 1981, Ser. No. 334,547
Claims priority, application France, Dec. 30, 1980, 80 27778
Int. Cl.³ E02D *5/34, 5/20*
U.S. Cl. 405—267 **12 Claims**



1. Method of pouring a concrete wall panel directly in the

ground, into which two concrete bars are poured at an interval in such a way that the axis of the future wall will intersect their midpoint at a right angle, characterized by digging a trench extending through the bars, by positioning in the trench a reinforcement with a transverse partition generally along the axis of each bar, and by pouring a concrete panel in the trench between the two transverse partitions.

4,465,404

WALL ELEMENT FOR AN UNDERGROUND GALLERY

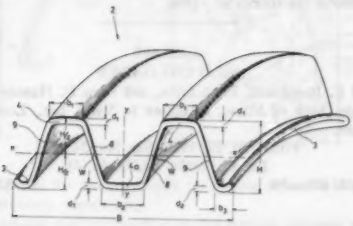
Peter Heintzmann, Bochum; Manfred Koppers, Duisburg; Karlheinz Bohnes, Bochum, and Lothar Domanski, Oberhausen, all of Fed. Rep. of Germany, assignors to Bochumer Eisenhuette Heintzmann GmbH & Co KG, Bochum, Fed. Rep. of Germany

Filed Jul. 9, 1982, Ser. No. 396,687

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127812

Int. Cl.³ E21D *11/00*

U.S. Cl. 405—288 **12 Claims**



1. A wall element for an underground gallery, comprising a W-shaped member having a height extending along a Y-axis and a width extending along an X-axis, said W-shaped member being formed so that it is symmetrical relative to the Y-axis and its axis of gravity coincides with the X-axis and lies at least approximately in a center of its height, said W-shaped member having bent away lateral flange portions, base portions and connecting web portions, said inner and outer connecting web portions having different thicknesses, the width of said W-shaped member being considerably greater than the height thereof, and the thicknesses of said portions being selected so that, in relation to used weight per meter, said W-shaped member has a maximum possible moment of resistance relative to the X-axis and a maximum possible bending load capacity in a plastic deformation region, said W-shaped member having such a profile and such thicknesses of said portions that said W-shaped member has at least approximately equal bending load capacity in the plastic deformation region in two opposite directions along the Y-axis.

4,465,405

METHOD AND DEVICE FOR THE BACKFILLING OF ROADWAY SUPPORTS IN MINE AND TUNNEL CONSTRUCTION WITH THE AID OF SUPPORT HOSES HAVING A HARDENING FILLER

Werner Dürrfeld, Herten, Fed. Rep. of Germany, assignor to GTG Gesteins- und Tiefbau GmbH, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,175

Claims priority, application European Pat. Off., Apr. 29, 1981, 81103227.5

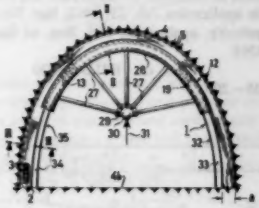
Int. Cl.³ E21D *11/18*; E01G *5/16*

U.S. Cl. 405—289 **22 Claims**

1. An underground support structural device for supporting the concave roof formation of an excavated underground tunnel, said structural device comprising:

at least one convex beam support member mounted a predetermined distance from said concave roof formation, said at least one convex beam support member having a first outer surface substantially parallel to the neutral plane of said at least one convex beam support member along its entire length, said first outer surface facing said concave roof formation and defining a space between said concave roof formation and said first outer surface, said first outer surface of said at least one convex beam support member further being of a predetermined width;

a resilient support hose member mounted to said at least one convex beam support member, said resilient support hose member having a first portion of its outer periphery placed on said first outer surface of said at least one convex beam support member and extending into said space, said resilient support hose member further having a second portion of its outer periphery extending beyond said



predetermined width of said at least one convex beam support member for at least a portion of its length; and

a hardener filler compound located inside said resilient support hose member forming an inflated filler hose having an inflated profile filling the space between said first outer surface of said at least one convex beam support member and said concave roof formation and extending beyond said predetermined width and partly around said at least one convex beam, support member such that said inflated filler hose forms a bearing support for said concave roof formation and further forms a locking support in the lateral direction of said at least one convex beam support member and thereby supports said excavated underground tunnel.

4,465,406

MINE ROOF SUPPORT UNIT

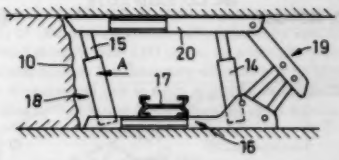
Klaus Beckmann, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,552

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035423

Int. Cl.³ E21D *23/08*

U.S. Cl. 405—296 **14 Claims**



1. A longwall mineral mining installation comprising a longwall conveyor and plurality of roof support units, the roof support units being positioned side-by-side, and each of the roof support units having a roof-engageable structure supported on a floor sill by hydraulic props, the floor sill of each roof support unit comprising a face-side floor sill part and a goaf-side floor sill part, advance means for telescopically interconnecting the two parts of each floor sill, each of the floor sill parts supporting at least one hydraulic prop, and each of the

floor sill parts being movable by said advance means relative to the associated floor sill part in the direction of roof support unit advance, the conveyor being supported on the floor sills of the roof support units and being positioned between the hydraulic props associated with the face-side floor sill parts and the hydraulic props associated with the goaf-side floor sill parts.

4,465,407

FIXING BRIDGE

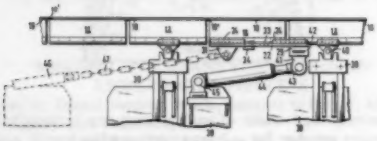
Karl H. Piester, Lünen; Friedrich Eggenstein, Bergkamen-Oberaden, and Günter Terhorst, Dülmen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Continuation of Ser. No. 159,391, Jun. 13, 1980, abandoned. This application Jul. 23, 1982, Ser. No. 401,314

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924395

Int. Cl.³ E21D *23/00*

U.S. Cl. 405—299 **15 Claims**



1. In a mineral mining installation including a conveyor and at least one pair of roof support units with advance mechanisms connected to the goaf side of the conveyor, an elongate fixing bridge adapted to be secured to the goaf side of said conveyor between said advance mechanisms, said bridge having a first connector adjacent to one end thereof and a pair of second connectors adjacent to the opposite end thereof, said first connector lying on a longitudinal axis of said bridge and including means for accepting a block anchoring arrangement located between said advance mechanisms, and said second connectors being vertically offset above and below said longitudinal axis and each including means for accepting a vertically inclined partial longwall anchoring arrangement extending beyond said advance mechanisms.

4,465,408

MINE-ROOF SUPPORT CONTROL MECHANISM

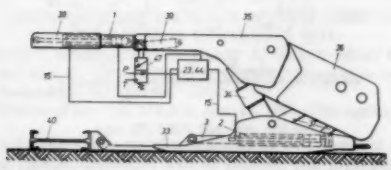
Karl Krieger, Wuppertal; Günter Kuschke, Castrop-Rauxel, and Werner Reinelt, Bochum, all of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 490,529

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217391; Feb. 12, 1983, 3304982

Int. Cl.³ E21D *23/16*

U.S. Cl. 405—302 **14 Claims**



1. An hydraulically-movable mine-roof support comprising an hydraulic advancing cylinder which is pressurised on both sides of a piston therein with pressurised fluid by a drive valve, the advancing cylinder being held in a base structure of the mine-roof support, a plurality of hydraulic, vertically-adjustable, props supported on said base structure for supporting a main roof-support canopy provided with a forward, auxiliary, roof-support canopy pivoted thereto and extensible in the direction of the working face in synchronism with longitudinal extension of the advancing cylinder by an auxiliary roof-support cylinder pressurisable on both sides of a piston therein with pressurised fluid, the said synchronous movement being controlled by a control valve communicating with the advancing cylinder via a control line, wherein:

(a) a measuring cylinder having a space of variable volume extends substantially parallel to the extensible length of the advancing cylinder and is connected to an annular space in the auxiliary roof-support cylinder by a control line; and

(b) a 2-position, 3-port, directional control valve which supplies pressurised fluid from a high pressure line to a pressure space of the auxiliary roof-support cylinder has a closure element spring-loaded in the direction of closure and is controllable by the pressure in the control line in such a way that the 2-position, 3-port, directional control valve is opened when the pressure falls below a pre-set threshold value and is closed when the pressure rises above the threshold value.

4,465,409

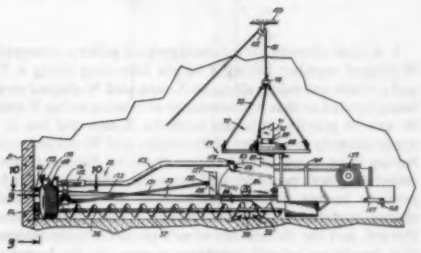
SILO UNLOADER

Floyd E. Buschbom, Long Lake, and Glen D. Hansen, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Filed Jan. 27, 1982, Ser. No. 343,024

Int. Cl.³ B65G *65/38, 53/48*

U.S. Cl. 406—59 **53 Claims**



1. A top unloading silo unloader for removing material from a tower silo having a cylindrical wall and an open doorway in said wall comprising: frame means having an inner end section locatable in the central section of the silo and an outer end section locatable adjacent the wall, impeller means mounted on the inner end section operable to move material toward an open doorway in the silo wall, collector means extended from the impeller means to the outer end section of the frame means operable to move material to the impeller means, support means connected to the impeller means and extended from the impeller means adjacent the collector means, means mounted on the outer end section of the frame means engageable with the support means to allow the collector means to move up and down relative to the support means, walker beam means rotatably mounted on the support means, said walker beam means having a first end located adjacent one side of the collector means and a second end located adjacent the other side of the collector means, drive wheel means rotatably mounted on the first and second ends of the walker beam means engageable with the material, drive means for rotating the drive wheel means to move the collector means around the silo about a generally upright axis, force transmitting means connected to the support means and movably connected to an outer end section of the collector means, extendible and contractible means mounted on the inner end section of the frame means having a movable member secured to the force transmitting

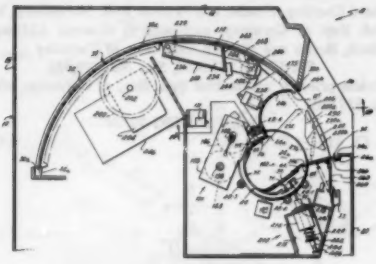
means to hold the force transmitting means in tension whereby the outer end section of the collector means is supported by the drive wheel means, and control means for operating the extendible and contractible means in a manner to maintain the collector means in a desired position.

4,465,410

PNEUMATICALLY-PROPELLED CARRIER SYSTEM

Victor J. Vogel, Oak Ridge, and Robert E. Morano, Ringwood, both of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,975
Int. Cl.³ B65G *51/32*
U.S. Cl. 406—111 **22 Claims**



1. A system for pneumatically propelling a carrier between distant stations, comprising:

a pneumatic tube connecting distant stations through which a carrier is pneumatically propelled between said stations, said tube having a generally circular cross-section,

a carrier positionable within said tube adapted to be pneumatically propelled therethrough between said stations, said carrier being generally tubular in shape with a longitudinal axis and a cross-section which permits said carrier to be freely rotatable within said tube about its longitudinal axis, said carrier having a side wall with a first carrier access opening therein to permit insertion and removal of articles relative to the interior of said carrier,

a first terminal at one of said stations connected to said tube for receiving and/or transmitting said carrier,

a captive carrier terminal at another of said stations connected to said tube for receiving and transmitting said carrier, said captive carrier terminal including a terminal access opening communicating with said carrier access opening of said carrier located at said terminal when said carrier is in a first predetermined rotational orientation about its longitudinal axis relative to said captive carrier terminal, said captive carrier terminal being constructed to prevent removal of said carrier under normal operating conditions, and

carrier rotating means at said captive carrier terminal for rotating said carrier located at said captive carrier terminal from a random rotational orientation about its longitudinal axis to said first predetermined rotational orientation to place said first carrier access opening and said access opening of said captive carrier terminal in communication.

4,465,411

GEAR SHAPING TOOL RECONSTRUCTION

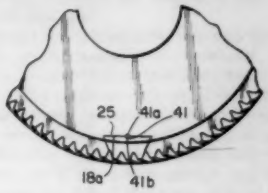
Clarence A. Boyce, Jr., Rte.3, Dr. 15, WS 387, Nineveh, Ind. 46164, and Harold E. Voetsch, 5905 Kilmer La., Indianapolis, Ind. 46250

Filed Apr. 29, 1982, Ser. No. 372,959
Int. Cl.³ B26D *1/12*; B21K *1/30*; B21D *53/28*
U.S. Cl. 407—28 **21 Claims**

1. A salvaged cutter for a shaping or shaving machine and comprising;

a plurality of cutter teeth circularly spaced about an axis and formed in one piece of material;

at least one additional tooth in the circumference of the cutter and having a tooth shape matching the other teeth but supported on a distinct piece of material locked to the



first mentioned piece of material, and;

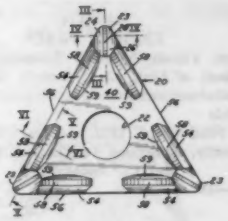
pin means directly engaging said one piece of material and said distinct piece of material and locking said additional tooth to said one piece of material to thereby lock said additional tooth in the cutter.

4,465,412

CHIP BREAKING INSERT FOR METAL CUTTING TOOLS

Raymond T. Zweekly, Royal Oak, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Sep. 7, 1982, Ser. No. 415,354
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—114 **10 Claims**



1. A chip breaking insert for a metal cutting tool, said insert comprising a cutting corner at the juncture of a top face and intersecting edge faces thereof, a chip breaking groove in the top face of said insert extending across said corner and intersecting said edge faces, characterized by said chip breaking groove being of spaced truncated conical surface segments with lateral symmetrical cross section (IV—IV) taken normal to said top face (**40**) and at right angles to a bisecting line (III—III) of said cutting corner (**23**) defined by spaced angularly related straight sides (**24**) joined by a straight bottom line (**28**), and said bottom line extending substantially parallel to the top face of said insert and at right angles to the edge face (**56**) section lines of said insert formed by said cross section.

4,465,413

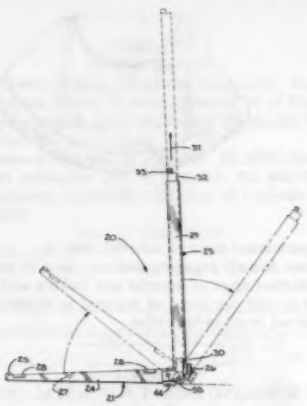
CARGO RETAINER

Rolf A. M. Petrén, Hovås, Sweden, assignor to NP Marketing Corporation, Neenah, Wis.

Filed Mar. 18, 1982, Ser. No. 359,200
Int. Cl.³ B61D *45/00*
U.S. Cl. 410—94 **13 Claims**

1. In a device for restraining a cargo load, an elongated floor contacting member provided with an upwardly facing load bearing surface, said member being adapted to project forwardly beneath a portion of the cargo load, a generally upright

member secured to the floor contacting member in spaced relation from the forward end of the floor contacting member for engaging with the cargo load, and transversely spaced wheels rotatably mounted adjacent to the rearward end of the floor contacting member, said wheels being out of contact with



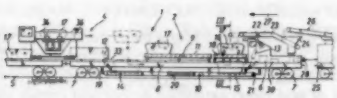
the floor when the floor contacting member of the restraining device is resting on the floor and being engageable with the floor for wheeled maneuvering of the restraining device when the forward end of the floor contacting member is raised relative to the floor.

4,465,414

FREIGHT TRAIN

Josef Theurer, Vienna; Manfred Brunninger, and Friedrich Oellerer, both of Linz, all of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft mbH, Vienna, Austria

Filed Nov. 8, 1982, Ser. No. 439,847
Claims priority, application Austria, Jan. 15, 1982, 138/82
Int. Cl.³ B65G *67/08*
U.S. Cl. 414—21 **6 Claims**



1. In a train of railroad cars for receiving, transporting and discharging bulk material, comprising

(a) a succession of cars coupled together for movement along a track in an operating direction,

(1) each one of the cars having a frame and

(2) a last one of the cars in the operating direction constituting a loading station for the bulk material,

(b) a plurality of transport containers for the bulk material arranged on the car frames, each transport container having a height,

(c) a continuous track means on the frames of the succession of cars extending along the train in said direction laterally of the containers,

(d) a mobile gantry crane including means for gripping, lifting and pivoting a respective one of the transport containers, the gantry crane being mounted on the track means for movement therealong to the loading station, and

(e) a first elongated conveyor for respective ones of the containers mounted on the last car between the track means:

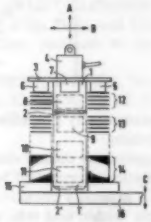
a second, independently driven elongated conveyor for respective ones of the containers mounted below the first elongated conveyor and spaced therefrom by a distance corresponding at least to the height of the containers, the second conveyor extending between two ends thereof, and a respective container transfer platform arranged in the range of each conveyor end, each transfer platform being linked to the frame of the last car and each transfer platform including a drive for vertically adjusting the transfer platform.

4,465,415

MAGNETIC SPREADING DEVICE FOR A SHEET METAL STACK OF INDIVIDUAL MAGNETIZABLE LAMINATIONS WITH A CENTRAL HOLE

Richard Eberling, Feucht, and Werner Voll, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,555
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121203
Int. Cl.³ B65G *59/04*
U.S. Cl. 414—122 **4 Claims**



1. In a magnetic spreading device with liftable and lowerable spreading magnets for removal of magnetizable individual laminations of a sheet metal stack with a central hole, the individual laminations, spread apart by magnetic force, are guided by a non-magnetic centering mandrel which fits into the central hole, and an adhesion device arranged on a carrying device for picking up the spread upper lamination, the improvement comprising:

(a) the magnetic separation device, the adhesion device and the centering mandrel being consolidated into a single component which can be raised, lowered and pivoted, and including;

(i) a non-magnetic tubular body which is closed off on one side for fitting into said hole;

(ii) at least one switchable spreading electromagnet in the interior thereof; and

(iii) at least one separately switchable adhesion device for the topmost individual lamination lifted by said spreading electromagnet disposed at the upper end of said tubular body.

4,465,416

WAFER HANDLING MECHANISM

David W. Burkhalter, and Maurits R. Kain, both of Redwood City, Calif., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 17, 1982, Ser. No. 378,689
Int. Cl.³ B25J *3/00*
U.S. Cl. 414—217 **6 Claims**

1. In a system for processing wafers to be used in the manufacture of integrated circuits, a wafer handling system comprising,

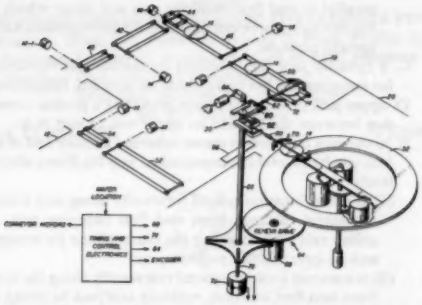
a first chamber from which the wafers are removed for

processing and where the wafers are returned after processing,

transporting means in a second chamber for transporting wafers removed from said first chamber toward a third chamber for processing, and

means in said second chamber for lifting said wafers from said transporting means and placing said wafers in said third chamber,

said means in said second chamber also capable of lifting said wafers from said third chamber and placing said wafers onto said transportation means for return to said first chamber, said means for lifting said wafers from said transporting means comprises a wafer handling device including claw means capable of engaging a wafer only on



one side, lifting said wafer by engaging said one side, transporting said wafer into said third chamber while in engagement with said one side, and releasing said wafer for processing in said third chamber,

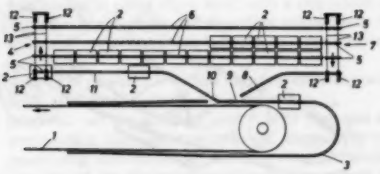
said third chamber having a rotating table and said wafer handling device being indexed to perform said engaging, lifting, transporting and releasing function in timed relationship with said rotating table.

4,465,417

SYSTEM FOR HANDLING VEHICLES OF A REVOLVING CABLEWAY IN A PARKING STATION

Erich Baumann; Klaus Eisenkolb, and Werner Morawietz, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 13, 1981, Ser. No. 310,814
Claims priority, application Austria, Nov. 7, 1980, 5471/80
Int. Cl.³ B65G *17/34;* E04H *6/34*
U.S. Cl. 414—235 **3 Claims**



1. A system for handling a succession of vehicles of a revolving cableway in a parking station for the vehicles, which comprises

(a) a plurality of equidistantly spaced, parallel hanger rails for supporting a plurality of the vehicles parked at said station, each one of the hanger rails having two ends, and

(b) conveyor means associated with the hanger rails and operable to deliver respective ones of the vehicles from the cableway to a respective one of the hanger rails for parking and to receive respective ones of the parked vehicles from the hanger rails for return to the cableway, the conveyor means extending transversely to the hanger rails and comprising

(1) a delivering conveyor line associated with one of the hanger rail ends,

(2) a receiving conveyor line associated with the other hanger rail ends, and

(3) drive means for operating the two conveyor lines in mutually opposite directions of conveyance,

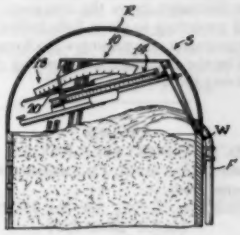
(4) each one of the conveyor lines comprising an endless series of vehicle carriers, each one of the vehicle carriers being adapted to carry one of said vehicles, the vehicle carriers being arranged parallel to the hanger rails at the same spacing as the hanger rails whereby a respective one of the vehicle carriers may be aligned with a respective one of the hanger rails for delivering a respective one of the vehicles to the respective hanger rail and for receiving a respective one of the vehicles from the respective hanger rail, and the vehicle carriers and hanger rails being of like cross section whereby the respective vehicles may be rectilinearly transferred between the conveyor lines and the rail hangers.

4,465,418

SUSPENSION FOR RING DRIVE SILO UNLOADER

Larry A. Norton, Elkhorn, Wis., assignor to Starline Products, Inc., Harvard, Ill.

Filed Feb. 25, 1982, Ser. No. 352,388
Int. Cl.³ B65G *65/36*
U.S. Cl. 414—313 **11 Claims**



1. In a silo unloader of the type having a tripod surmounting the wall of a cylindrical silo, three suspension sheaves journalled at the top of the tripod, three cables each of which is trained over one of the sheaves and hangs down in the silo, a silo unloader mechanism having three generally radially extending support arms each of which has a connection to one of said cables to suspend the unloader mechanism in the silo so that it may be raised and lowered, and there being a filler spout for loading material into the top of the silo, the improvement comprising:

the connection to one of said support arms includes an upright arm means on said one of said support arms, a pivotal connection between the cable and the upright arm means, and means for selectively positioning said pivotal connection in the plane of the other two cable connections or substantially above said plane, so the unloader may selectively occupy a horizontal working position for unloading or an inclined position when it is raised for filling the silo, the unloader in said inclined position having its high side above the filler spout.

4,465,419

METHOD AND APPARATUS FOR CONTROLLING THE VOLUMETRIC CHARGE OF A COKE OVEN FURNACE

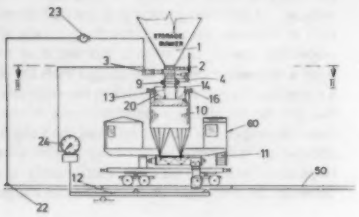
Josef Stratmann, Recklinghausen; Claus Urbye, Flaesheim, and Willi Brinkmann, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,655

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114338

Int. Cl.³ B65G *67/06*

U.S. Cl. 414—328 13 Claims



1. A method of measuring out a furnace charge of a predried and preheated coal in a closed system in which the coal is fed from a bottom discharge of a storage bunker into a filling cart container disposed therebeneath, comprising opening the bottom discharge of the storage bunker to permit the fall of the coal from the bunker into the container while blocking off a portion of the container space until the remaining space of the container is filled and coal no longer flows through the bottom discharge and a column of coal remains in the discharge above the filling container, directing a shutoff member through the column to cut off the column above the upper edge of the filling container, and opening the blocked off portion of the filling container space to absorb the coal remaining in the storage bunker discharge above the container.

6. A method according to claim 1, including blocking off a portion of the container space using a blocking member movably mounted to the container and opening the blocked-off portion by moving the blocking member.

4,465,420

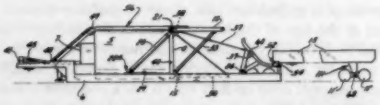
SELF-ERECTING PORTABLE PAVING MIX SILO

Bruce A. Dillman, Cape Coral, Fla., assignor to Bituma-Stor, Inc., Marquette, Iowa

Filed Mar. 3, 1982, Ser. No. 354,218

Int. Cl.³ B60P *1/56*

U.S. Cl. 414—332 11 Claims



1. A self-erecting portable silo assembly comprising a bin for storage of paving mix and the like that is substantially cylindrical and has a bin axis and top and bottom ends spaced along said axis, front and rear supporting means for supporting the bin in an erected upright position with its bottom end elevated, and a rigid horizontally elongated bin frame to which bottom ends of the supporting means are attached when the bin is erected and on which the bin is also supported in a transport position wherein the bin axis is substantially horizontal and the bin has a rear side uppermost and its top end near a front end of said frame, said assembly being characterized by:

A. cooperating means on the bin, near a front side thereof and its bottom end, and on said bin frame, intermediate the front and rear ends thereof, providing a releasable connection between the bin and said frame that defines a first horizontal swinging axis transverse to said bin axis and in fixed relation to the bin frame about which the bin can swing between its transport position and an intermediate position in which the bin axis is inclined to the horizontal;

B. rear support connection means operative when the bin is in said intermediate position to provide

(1) a rigid connection between an upper portion of said rear supporting means and the bin, near the rear side thereof, and

(2) a detachable pivot connection between a lower portion of said rear supporting means and said bin frame, located between the front and rear end of the bin frame and near the rear end thereof, defining a second swinging axis which is in fixed relation to the bin frame and parallel to said first swinging axis and about which the bin can swing between said intermediate position and its upright position;

C. a cylinder jack that is axially extensible and retractable, for swinging the bin upward and downward, respectively;

D. upper jack connection means providing a pivotal connection between the bin and an upper end of said jack;

E. lower jack connection means whereby a lower end of said jack can be pivotably connected to said bin frame alternatively

(1) at a first location spaced forwardly along said frame a substantial distance from said first swinging axis, enabling said jack to swing the bin between its transport and its intermediate positions, and

(2) at a second location spaced rearwardly along the frame from said first location, enabling said jack to swing the bin between its intermediate and its upright positions; and

F. front support connection means operative when the bin is in said upright position to provide

(1) a connection between an upper portion of said front supporting means and the bin, near the front side thereof, and

(2) a detachable connection between a lower portion of said front supporting means and the bin frame.

4,465,421

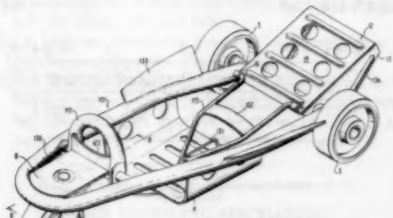
WHEELED SUPPORT DEVICE FOR DISABLED VEHICLE TIRE

Hernando Murillo, Calle 94 No. 13-87, Bogota, Colombia

Continuation-in-part of Ser. No. 157,606, Jun. 9, 1980, Pat. No. 4,350,470. This application Jul. 14, 1982, Ser. No. 398,142

Int. Cl.³ B60B *29/00*

U.S. Cl. 414—430 8 Claims



1. In a support device for the disabled tire of a vehicle comprising a generally horizontally extending, generally U-shaped frame having substantially parallel side members, front and rear wheels and a substantially U-shaped cradle extending between said side members and between said front and rear wheels and having a width sufficient to receive a tire to be

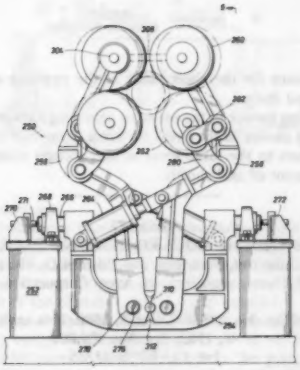
mounted on said support device, the improvement comprising a restraining member mounted forwardly of said cradle for pivoting movement from a first position in which its extends in a generally vertical direction above said cradle for retaining said tire in its mounted position against forward movement out of said cradle, to a second position in which it extends in a generally horizontal direction and resilient means for yieldably retaining said restraining member in said first position, whereby said restraining member can be temporarily depressed into its said second position for the purpose of positioning said support device under a vehicle, and then released to return through the action of said resilient means to said first position.

4,465,422

METHODS AND APPARATUS FOR THREADING A PIPE

Donald L. Blust, Sr., Palestine; Jerome J. Pope, Waller, and Lawrence L. Troxell, Jr., Navasota, all of Tex., assignors to The Pope Company, Inc., Houston, Tex.

Filed Oct. 30, 1980, Ser. No. 202,130
Int. Cl.³ B21D *43/00*
U.S. Cl. 414—433 **32 Claims**



1. A system for handling joints of pipe of various diameters in a pipe threading operation including pipe rotating means, comprising:

a plurality of plates rotatable in synchronization for properly positioning individual joints of pipe within said system,

drive means for rotating a common drive shaft,

a plurality of gear boxes each containing a plurality of gears interconnecting said drive shaft with a respective one of said plurality of plates and providing substantially all the rotational speed reduction between said drive means and said plates,

a plurality of powered V-rollers for pre-positioning said pipe in an axial direction within said system,

a powered cart for grasping a section of pipe and axially transporting said pipe a preselected distance for proper positioning with respect to said pipe rotating means, and

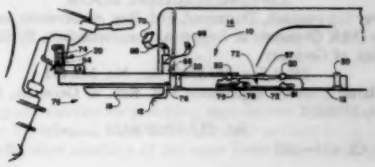
a plurality of steady rest assemblies for supporting a pipe being rotated by said pipe rotating means, each including (a) a steady rest base, (b) a cradle pivotable about said steady rest base and having extending shafts for engagement with said steady rest base, (c) a pair of arms pivotable about said cradle, (d) at least three tires supported by said pair of arms and adapted for rotational engagement with said pipe, and (e) adjustment means for altering the position of one tire supported by one of said arms with respect to another tire supported by the same arm for properly supporting pipe of various diameters.

4,465,423

OUTBOARD MOTOR HANDLING AND STORING DEVICE

Milan B. Anderson, Chula Vista, Calif., assignor to Recreation Industries Company, Oak Grove, Oreg.

Filed May 10, 1982, Ser. No. 376,700
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—462 **12 Claims**



1. A vehicle mounted handling and storing apparatus for an outboard motor comprising:

a single telescopic spar support means telescopeable along a path substantially parallel to the longitudinal center line of said vehicle between a stowed position wherein the distal end of the single telescope spar means is within the vehicle and deployed position wherein the distal end of the single telescopic spar means extends from said vehicle; and

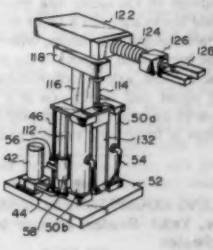
a motor attachment means positioned on the distal end of said single telescopic spar support means, said motor attachment means comprises a base member attached to said single telescopic spar support means and a support member attached to said base member whereby when stored on said apparatus said outboard motor is positioned parallel to said single telescopic spar support means.

4,465,424

INDUSTRIAL ROBOT

Hajimu Inaba; Seiichiro Nakashima, both of Hino; Shigemi Inagaki, Musashino, and Susumu Ito, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,397
Claims priority, application Japan, Jun. 29, 1981, 56/99739
Int. Cl.³ B25J *19/00*
U.S. Cl. 414—589 **3 Claims**



1. An industrial robot comprising:

a manipulative robot hand:

a vertically movable body supporting said robot hand thereon:

a vertical drive means for effecting vertical movement of the vertically movable portion of the robot guided by a vertical guide pillar or pillars, said vertical drive means including a vertical feed motor;

a pneumatic cylinder means for applying an upward force to said vertically movable portion;

air storage means arranged between a pressurized air source and said pneumatic cylinder means for storing air under pressure therein;

a pressure regulator for regulating the pressure of said air

supplied to said air storage means and a check valve arranged between said pressurized air source and said air storage means; and

air conduit means for providing a direct connection between said air storage means and said pneumatic cylinder means.

4,465,425

DEVICE FOR THE PARAXIAL KINETIC CONTROL OF A LIFTING MACHINE BOOM

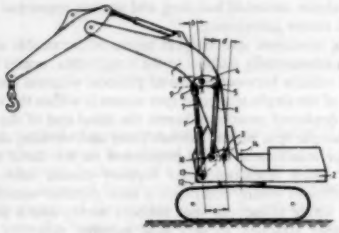
Dieter Schwappach, Dortmund, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,451

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104072

Int. Cl.³ E02F 9/20

U.S. Cl. 414—685 **33 Claims**



1. A device for dynamic control of a boom that is pivotable about a boom axis spaced from and perpendicular relative to a swivel axis of rotation of a rotatable platform of a mobile excavator or lifting machine, comprising

at least one coupling rocker being pivotally mounted, at a pivotal axis, on the boom and constituting means for providing a pivotal connection for a plurality of points of application of force thereat, two link means for respectively pivotally connecting two of said points of application of force to the platform said two points being on opposite sides of said pivotal axis, at least one of said link means being a variable-length link means, a pivot axis on said platform of the other link means being located between said boom axis and a pivot axis on said platform of said variable-length link means, whereby the torque gradient of the boom with respect to the pivoting of said boom about said boom axis is controllable over its range of pivoting about said boom axis in a selectably predetermined curve depending on the position of said points of application of force with respect to said pivotal axis.

4,465,426

HANDLING EQUIPMENT FOR SHEET PRESSES

Finn Jonsson, Ystad, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jul. 7, 1982, Ser. No. 395,993

Claims priority, application Sweden, Jul. 10, 1981, 8104297

Int. Cl.³ B65G 1/04

U.S. Cl. 414—751 **3 Claims**

1. Handling equipment for a sheet press for feeding sheet blanks to the press and withdrawing pressed products from the press, said handling equipment comprising

a first station for the reception of pressed products,

a second station to contain a supply of sheet blanks,

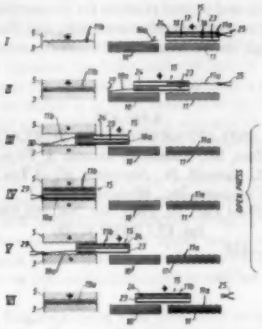
a track extending from the press to said stations, and

a shuttle movable along said track and having substantially horizontal, first and second transport compartments at different levels,

said first compartment serving to receive sheet blanks from said second station and deliver them to the press, and said second compartment serving to receive pressed products from the press and deliver them to said first station,

a gripping device at said first station for retaining a pressed product upon the movement of said shuttle away from said first station,

a lifting device adjacent one end of said second station for raising one end of a sheet blank to the same level as said first transport compartment of said shuttle,



stop means for the sheet blank at the opposite end of said second station,

a gripping device in the press for retaining a sheet blank, and

a lifting device in the press for raising one end of a pressed product to the same level as said second transport compartment of said shuttle.

4,465,427

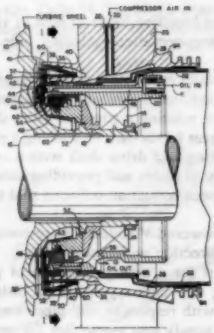
AIR AND OIL COOLED BEARING PACKAGE

Zoltan L. Libertini, Stamford, and Edward O. Hartel, Orange, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 195,050, Oct. 8, 1980. This application Jun. 16, 1982, Ser. No. 389,006

Int. Cl.³ F01D 25/16

U.S. Cl. 415—1 **4 Claims**



1. In the turbine section of a gas turbine engine, said engine having means to supply pressurized cooling air and cooled oil to said turbine section and said turbine section including a structural shroud which defines the flow path; a method of cooling and insulating the oil contacting surfaces in a bearing package including seals and bearings and positioned to support the engine shaft in the turbine section comprising:

supporting said bearing package within an inner structural member fixed by struts to the turbine shroud;

constructing an air supply plenum surrounding the bearing package;

supplying cooling air through said struts to the air supply plenum;

positioning a shield containing a sealed insulating cavity therein surrounding the bearing package between the air supply plenum and the bearing package;

distributing cooling air from the air supply plenum to and around the bearing package;

distributing oil within the bearing package in conduits positioned inward of the combined insulating means formed by the above steps; and

circulating said oil within the seal portion of the bearing package to cool said seal portion.

4,465,428

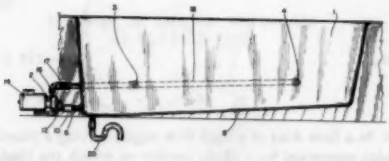
PIPE FITTING AND METHOD FOR DRAINING A HYDROTHERAPY PUMP

Donald Lindberg, North Hollywood, Calif., assignor to Custom Home Spa, Inc., Van Nuys, Calif.

Continuation of Ser. No. 182,123, Aug. 28, 1980, abandoned. This application Jun. 30, 1983, Ser. No. 509,383

Int. Cl.³ F01D *1/00*

U.S. Cl. 415—53 R **2 Claims**



1. In combination,

(a) a hydrotherapy pump for a hydrotherapy bath having a single impeller rotatably mounted in a chamber defined by walls, a pump suction opening centrally located in a chamber wall, a second opening in a chamber wall at a bottom portion of the chamber, and a pump exhaust,

(b) a one-piece pipe fitting attached to the pump suction opening comprising an inlet portion and an outlet portion, said outlet portion being attached to the pump suction, and having an axis parallel to and vertically displaced from the inlet portion, and a drain conduit portion extensing from the inlet portion and communicating therewith, the drain conduit also communicating with said second opening in the chamber wall and always providing an unobstructed passageway from the chamber to the inlet portion, said drain conduit portion having an axis parallel to the axis of the outlet portion,

(c) said pump and said fitting being coupled in a manner such that when the pump is shut off, water remaining in the chamber drains therefrom through the drain conduit portion of the fitting.

4,465,429

STEAM TURBINE WITH SUPERHEATED BLADE DISC CAVITIES

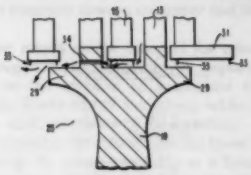
Harry F. Martin, Upper Providence, and Martin E. Schlatter, Glen Mills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1982, Ser. No. 344,330

Int. Cl.³ F01D *5/14*

U.S. Cl. 415—116 **10 Claims**

1. A steam turbine comprising a shaft, a plurality of stationary blade rins, a plurality of rotor blade discs shrunk on said shaft in such a manner to form a cavity between adjacent discs so that a plurality of said cavities are disposed serially with respect to the steam flow from a high pressure to a low pressure portion of the turbine, means throttling the steam entering said cavities for providing superheated steam in said cavities and control leakage seals between said rotor blade discs and said stationary blade rings at a radially outward portion of said cavities, which cooperate with the means throttling the steam



entering said cavities for providing superheated steam to maintain the superheated condition within the cavities to prevent stress corrosion cracking of the rotor blade discs initiating at the bore.

4,465,430

GUIDE CASE

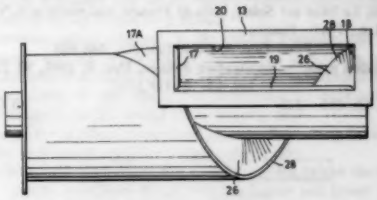
David G. De Montmorency, 276 Blair Rd., Cambridge, Ontario, N1S 2K1, Canada

Filed Apr. 29, 1982, Ser. No. 373,189

Claims priority, application Canada, Aug. 6, 1981, 383290

Int. Cl.³ F04D *29/40*

U.S. Cl. 415—205 **11 Claims**



1. Guide case, for receiving a flow of fluid in an inlet duct for discharging the fluid from an outlet duct, and for imparting to the discharged fluid a helical component of motion, comprising:

fixed inner and outer tubes defining between them an annular chamber, one axial end of which comprises the outlet duct;

fixed inner, outer, front and back walls, defining an inlet duct, with the inner and outer walls being parallel to the axis of the chamber, and merging smoothly tangentially with the inner and outer tubes respectively; and

a fixed helical wall, merging smoothly with the back wall, extending radially between the tubes, and disposed helically along the tubes, and defining and sealing off the other axial end of the annular chamber.

4,465,431

OVERLOAD PROTECTION APPARATUS FOR VARIABLE PITCH PROPELLERS

Harald Gross, Herbrechtingen, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,645

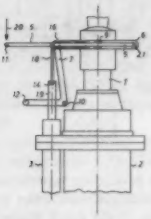
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3126188

Int. Cl.³ B64C *11/06*

U.S. Cl. 416—31 **8 Claims**

1. An overload protection device for propellers having variable pitch propeller blades, said device being of the kind employing a hydraulic servomotor, an adjustment rod actuatable by said servomotor for varying the pitch of the propeller blades, a restoring lever, an intermediate lever means operably

engaged with said adjustment rod and said restoring lever, and mechanical restoration means including an auxilliary adjustment means responsive to an overload condition for actuating said intermediate lever to adjust said restoring lever for restor-



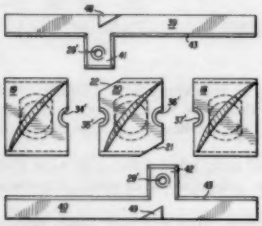
ing the pitch to outside the overload range, wherein: said intermediate lever comprises first and second arms mounted on said adjustment rod about a fulcrum located between said arms, and said restoring lever is pivotally linked to said first arm and is thereby linked to said adjustment rod.

4,465,432

SYSTEM FOR MOUNTING AND ATTACHING TURBINE AND COMPRESSOR PRISMATIC ROOTED BLADES AND MOUNTING PROCESS

Gérard M. F. Mandet, Epinay Sous Senart, and Marc R. Marchi, Le Mee sur Seine, both of France, assignors to S.N.E.C.-M.A., Paris, France

Filed Dec. 9, 1982, Ser. No. 448,405
Claims priority, application France, Dec. 9, 1981, 81 22982
Int. Cl.³ F01D *5/32*
U.S. Cl. 416—215 **10 Claims**



1. A system for mounting and attaching prismatic rooted blades in a turbine and compressor rotor comprising:

a rotor rim having a circumferential groove formed therein and within which said blades are disposed wherein said blades each further comprise a airfoil portion, a rectangular platform attached to said blade, a cylindrical shank connected to said platform, and a root attached along the platform's plane of longitudinal symmetry to said shank for cooperative engagement with said groove;

a mounting sector having a length approximately equal to three times the width of said blade platform of each of said blades and which further comprise a first and second blade and a stop-blade disposed between said first and second blades and having a first and second cut corner diametrically opposite one another; and

a stop device having at least two teeth, the widths of which are equal to the distance between the shanks of two neighboring vanes and which are shaped so as to be placed between a bottom portion of the mounting sector and an underside portion of the platforms of said first, second and stop-blades and for locking the position of said stop-blade.

4,465,433

FLOW DUCT STRUCTURE FOR REDUCING SECONDARY FLOW LOSSES IN A BLADED FLOW DUCT

Hans Bischoff, Groebenzell, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 17, 1983, Ser. No. 458,654
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1982, 3202855
Int. Cl.³ F01D *5/02*
U.S. Cl. 416—223 A **12 Claims**

1. In a flow duct of a fluid flow engine having a plurality of blades supported by a blade carrier on which the blades are circumferentially spaced to form a flow duct defining a flow direction (**17**) between two adjacent blades forming a pair, whereby the blade carrier forms a duct floor, and wherein an arched zone is located in the flow duct, said arched zone extending along the suction side of an adjacent blade and spaced from the pressure side of the opposite blade of a pair thereby having a continuous drop toward the pressure side of the opposite blade of a pair in a direction (**16**) across the flow direction, the improvement wherein said arched zone (**13, 13'**) comprises a first section (**23**) rising in a concave manner in the flow direction (**17**) and beginning in an entrance side of the respective duct, a second peak section (**24**) in an exit side of the duct and a falling third section (**25**) falling toward an exit (**22**) of the duct, said arching zone (**13, 13'**) sloping down in the cross direction (**16**) beginning at the suction side of the adjacent blade (**11**).

4,465,434

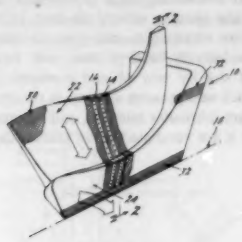
COMPOSITE TURBINE WHEEL

George W. Rourk, Southfield, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Apr. 29, 1982, Ser. No. 372,913
Int. Cl.³ F01D *5/34*
U.S. Cl. 416—230 **1 Claim**

1. A carbon fiber composite turbine wheel comprising a hub having a plurality of integral radially extending blades thereon, said hub and blades comprising a plurality of discrete axially alternate lamina, one of said lamina comprising a plurality of discrete circumferentially arranged sectors, a sector being provided in said one lamina for each of said radially extending blades, each of said sectors having radially extending parallel carbon fibers, the next adjacent lamina comprising circumferentially extending carbon fibers, a first plurality of axially extending carbon fibers at the central axis of said hub and a second plurality of axially extending carbon fibers between each of said blades in radially spaced relation to said first plurality of axially extending fibers whereby hoop strength is

given to said hub by said circumferentially extending fibers, radial strength is given to said blades by said radially extending



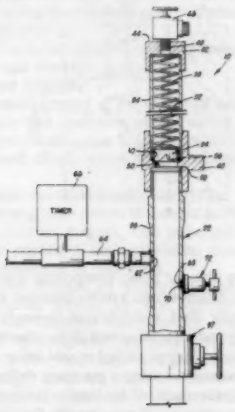
fibers, and axial strength is given by said axially extending fibers.

4,465,435

APPARATUS FOR USING NATURAL GAS PRESSURE FOR PUMPING A WELL

James I. Copas, P.O. Box 2109 SE. 12, Oklahoma City, Okla. 73129

Filed Apr. 26, 1982, Ser. No. 371,553
Int. Cl.³ F04B *47/12*
U.S. Cl. 417—56 **3 Claims**



1. An apparatus for using natural gas pressure in a well to pump liquids from the well, comprising:

a casing disposed in the well to extend from an upper end thereof adjacent the earth's surface to a liquid and gas producing formation, wherein portions of the casing within said formation are perforated to permit liquids and natural gas to accumulate within said casing;

a tubing, having a closed upper end and an open lower end, the tubing passing through the upper end of the casing and sealed thereto to close the well, and the tubing extending downwardly within the casing a distance sufficient for portions of the tubing near the lower end thereof to extend into accumulated well liquids, whereby natural gas pressure in the well will force liquids into the tubing;

a piston assembly disposed in the tubing for sliding movement therein, comprising:

a mandrel;

a piston member mounted on the mandrel and having an outside diameter slightly smaller than the inside diameter of the tubing so as to permit liquid to seep about the piston assembly in a static condition of the piston assembly within accumulated well liquids while forming a seal with the tubing in a dynamic condition of the piston assembly wherein a pressure differential across the piston assembly and liquid disposed thereabove drives the piston assembly toward the upper end of the tubing; and

sliding valve means on the mandrel for opening a fluid path through the piston assembly in response to a force exerted on the mandrel to accelerate the mandrel toward the lower end of the tubing while closing said path in a static condition of the mandrel;

stop means disposed in the tubing near the lower end thereof for supporting the piston assembly at a location within accumulated well liquids, whereby the sliding valve means closes said fluid path at such times that the piston assembly rests upon the stop means;

an outlet conduit mounted on the tubing and fluidly communicating with portions of the interior of the tubing near the upper end thereof;

a timer operated valve disposed in the outlet conduit for periodically relieving pressure above the piston assembly, thereby enabling natural gas pressure in the well to drive the piston assembly and liquids disposed thereabove toward the upper end of the tubing;

mandrel arresting means disposed within portions of the tubing near the upper end thereof for exerting a force on the mandrel to decelerate the mandrel, thereby operating the sliding valve means to open the fluid path through the piston assembly, whereby natural gas pressure below the piston assembly can be relieved to permit the piston assembly to fall to the stop means;

a standing valve disposed in the tubing between the stop means and the lower end of the tubing, said valve being disposed so as to be operable to permit fluid passage from the casing to the tubing but inoperable to permit fluid passage from the tubing to the casing; and

means for injecting pressurized gas into the tubing between the stop means and the valve, comprising:

a downhole packer mounted on the tubing below the stop means to provide a seal between upper and lower portions of the annulus between the tubing and casing, wherein at least one aperture is formed through the tubing between the downhole packer and the stop means;

standing valve means disposed in the tubing to communicate with said aperture for admitting pressurized gas in the upper portion of said annulus into the tubing while preventing escape of fluids from the tubing to the annulus; and

means for introducing compressed gas into said annulus at the upper end of the casing.

4,465,436

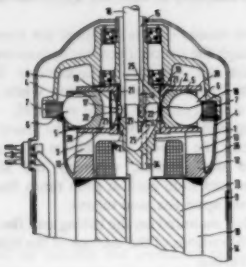
RADIAL PISTON COMPRESSOR

Siegfried Schönwald, Bad Neustadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,553
Claims priority, application Fed. Rep. of Germany, May 25, 1981, 3120812
Int. Cl.³ F04B *35/04, 1/22*
U.S. Cl. 417—271 **16 Claims**

1. In a radial piston compressor comprising a cylinder block rotatably supported on a stationary shaft, pistons reciprocally disposed in spaces of the cylinder block, a guide rotatably disposed about the cylinder block with its axis of rotation eccentric to that of the cylinder block, there being a gap between the stationary shaft and the interior of the cylinder block, a suction slot and a pressure slot extending circumferentially over a portion of the stationary shaft covered by the cylinder block, and means for introducing oil into said gap, the improvement comprising a configuration in which the cross-section of the gap decreases in the direction from the suction

slot to the pressure slot with the oil being introduced into the gap in the vicinity of the largest gap cross-section such that the pressure of the oil introduced into the gap is equal to or greater



than the pressure of the gas being compressed, whereby an improved seal between the stationary shaft and the cylinder block is obtained.

4,465,437

PUMP COMPRISING A CANNED MOTOR

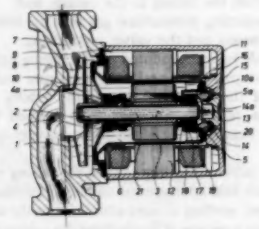
Niels Jensen, and Kurt F. Nielsen, both of Bjerringbro, Denmark, assignors to Grundfos A/S, Bjerringbro, Denmark

Filed Feb. 4, 1982, Ser. No. 345,569

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105389

Int. Cl.³ F04B *39/02, 35/04*

U.S. Cl. 417—366 **4 Claims**



1. A pump having a slotted tube motor, comprising:

(a) a housing having a partition for defining a pump chamber and a motor chamber;

(b) a can arranged in said housing for defining a rotor chamber and a stator chamber in said motor chamber, said can having a tubular wall and a bottom wall in which an opening is defined;

(c) a pump shaft arranged in said pump and rotor chambers;

(d) a rotor arranged in said rotor chamber and rigidly fixed to an intermediate portion of said pump shaft;

(e) first and second bearing sleeves in which said pump shaft is rotatably mounted, said first bearing sleeve being arranged between said partition and said rotor, and said second bearing sleeve being arranged between said rotor and said opening in said bottom wall of said can;

(f) an annular sealing means arranged between said second bearing sleeve and said bottom wall of said can, said sealing means defining an air duct;

(g) a vent plug removably arranged in interlocking relationship with said sealing means whereby said air duct is closed; and

(h) a connecting duct having an inlet adjacent to said bottom wall of said can and having an outlet connected at a point along a slot defined between said second bearing sleeve and said pump shaft, wherein in response to rotation of said pump shaft, a liquid medium is forced away from and a gaseous medium is forced toward said pump shaft, and wherein said connecting duct is arranged such that, in response to the opening of said air duct, said media pass from said rotor chamber to said open air duct by way of said slot exclusively, except that said liquid medium reaches said slot by way of said connecting duct, as a result of which said gaseous medium is ventilated and said liquid medium lubricates said slot, and wherein said gaseous medium is not ventilated when said air duct is closed.

4,465,438

PISTON DIAPHRAGM PUMP

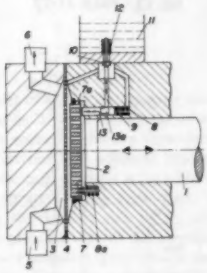
Rüdiger Bräuer, Hamburg, and Dirk Petersen, Travenbruck, both of Fed. Rep. of Germany, assignors to Bran & Lübbe GmbH, Norderstedt, Fed. Rep. of Germany

Filed May 12, 1982, Ser. No. 377,573

Claims priority, application European Pat. Off., Feb. 5, 1982, 821000833.1

Int. Cl.³ F04B *9/08, 43/06*

U.S. Cl. 417—386 **5 Claims**



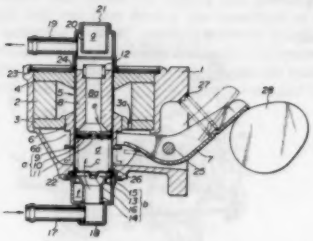
1. A diaphragm plunger pump comprising a pump housing having a pumping chamber and a drive chamber adapted to be filled with hydraulic fluid, a diaphragm sealingly mounted in said pump housing and separating said drive chamber from said pumping chamber, a plunger guided in said drive chamber for reciprocating movement causing a pumping deflection of said diaphragm by displacement of hydraulic fluid in said drive chamber, a supply container for hydraulic fluid communicating with said drive chamber via a refill valve opening in flow direction away from the supply container, a displaceable diaphragm support plate disposed in said drive chamber for limiting the deflection of said diaphragm towards said drive chamber, a control member axially movable by said support plate between a blocking position keeping said refill valve closed, and a release position permitting said refill valve to open in response to a pressure difference between said supply container and said drive chamber, said support plate being freely displaceable in said drive chamber for limited axial and tilting movement, said control member comprising a separate push rod independently guided in said pump housing for limited axial movement between a blocking position at which said push rod may abut a radially outer portion of said support plate and a release position at which said push rod rests against said support plate; spring means biasing against said push rod into said blocking position, and said support plate being displaceable by said diaphragm to rest with a radially outer portion thereof against said push rod for displacing said push rod against the bias force of said spring means into its release position.

4,465,439

MAGNETICALLY-COUPLED RECIPROCATING PUMP

Tadashi Seino, Morioka, Japan, assignor to Tohoku Mikuni Kogyo Co., Ltd., Iwate, Japan

Filed Sep. 22, 1980, Ser. No. 189,656
Claims priority, application Japan, Oct. 25, 1979, 54-138093
Int. Cl.³ F04B 17/00
U.S. Cl. 417—417 10 Claims



1. A pump utilizing a permanent magnet comprising:
a sleeve disposed at the center of a nonmagnetic body, a fluid outlet and inlet provided at downstream and upstream portions of said sleeve, respectively, and an inner hole through said sleeve connecting said fluid outlet and inlet,
a plunger of material capable of being magnetized slidably inserted into the inner hole of said sleeve,
a plunger spring for axially urging said plunger in said sleeve in one direction,
a yoke, of material capable of being magnetized, provided outside said sleeve,
a permanent magnet,
a fluid passage formed at the center of said plunger,
downstream and upstream check valves provided within said sleeve for allowing fluid to flow in only one direction, one of said check valves being attached to said plunger, and
a rocker arm mounted outside said yoke,
wherein a magnetic circuit is formed within at least two of said permanent magnet, said yoke and said plunger, at least one portion of said yoke being movable with respect to the remainder of said yoke,
said movable portion of said yoke contacting and being mechanically moved by said rocker arm thereby to change the magnetic reluctance of said magnetic circuit and alter the magnetic flux passing through said plunger, thereby to vary the magnetically attracting force between said plunger and said yoke to balance the magnetically attracting force with the tension of said plunger spring, thereby to conduct a pumping action at said plunger.

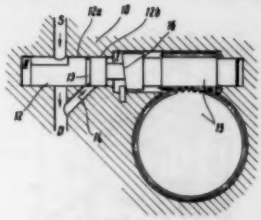
4,465,440

OIL PUMP FOR HAND RAIL CHAIN SAW MACHINES

Peter Thomsen, Quickborn, and Manfred Mäthner, Hamburg, both of Fed. Rep. of Germany, assignors to Sachs-Dolmar GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 197,295, Oct. 15, 1980, abandoned. This application Jul. 7, 1983, Ser. No. 511,694
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945246
Int. Cl.³ F04B 21/00
U.S. Cl. 417—500 1 Claim

1. An oil pump comprising:
a pump housing having a cylinder therein and having an oil suction channel and an oil pressure channel, each communicating with said cylinder, and a cross channel coupling said cylinder with said oil pressure channel;
a pump piston positioned for substantially continuous reciprocation within said cylinder and having an annular groove in the side surface thereof located longitudinally on said pump piston to pass across said cross channel and to move a distance within said cylinder on each side of said cross channel as said pump piston reciprocates in said cylinder to carry fluid from said oil pressure channel into said cylinder and distribute such fluid over the interior of said cylinder to lubricate said piston and said cylinder and



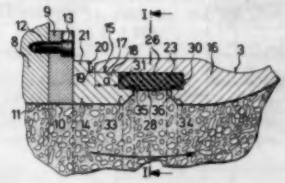
to provide a seal to prevent penetration of air into said cylinder during operation; and
a drive unit for causing said pump piston to reciprocate substantially continuously within said cylinder as said drive unit operates.

4,465,441

TWO-CYLINDER PUMP FOR HEAVY FLOWABLE MATERIALS, SUCH AS CONCRETE

Friedrich Schwing, Herne, Fed. Rep. of Germany, assignor to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,298
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 3103321
Int. Cl.³ F04B 7/00, 15/02
U.S. Cl. 417—517 19 Claims



1. A two-cylinder pump for heavy flowable materials, such as concrete, comprising a shutter mechanism which is pivotable across an apertured face plate, the shutter mechanism being sealed against the face plate by means of a cutting ring which has a contact surface on its front end for contacting the face plate and which is axially movable relatively to the shutter mechanism and is supported thereon with its rear end engaging a rectangular cross-section flexible rubber ring, the flexible ring having first and second sides which are aligned generally axially and first and second ends which are aligned generally radially, the first and second sides being of greater length than the first and second ends, whereby the cutting ring is urged resiliently against the face plate, means for locating the cutting ring, along a portion of its length, on the shutter mechanism, one of the shutter mechanism and the cutting ring having a support surface for engaging the first side of the flexible ring along essentially its entire length, a first seating for the first end of the flexible ring on the cutting ring which includes an annular extension which partly overlaps the second side of the flexible ring in the axial direction, a second seating for the second end of the flexible ring on the shutter mechanism which includes an annular extension which partly overlaps the second side of the flexible ring in the axial direction, said annular extensions partly overlapping the second side of the flexible

ring from opposite ends thereof so that a part of the second side surface of the flexible ring is left free between the annular extensions, and stops on the cutting ring and the shutter mechanism which limit the extent to which the cutting ring is inserted in said means for locating the cutting ring of the shutter mechanism.

4,465,442

ROTARY PISTON PUMP WITH PRESSURE EQUALIZATION CHAMBERS FOR THE SHAFT SPLIT SEALS

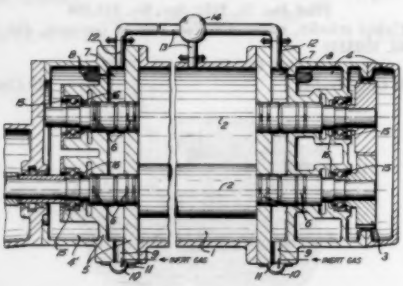
Hermann Lang, Rechtenbach-Hüttenberg, and Jürgen Steinmüller, Biebertal, both of Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,798

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047699

Int. Cl.³ F04C *18/18, 27/00, 29/00;* **F16J** *15/40*

U.S. Cl. 418—2 **9 Claims**



1. A rotary piston pump comprising a casing and partitions within said casing and defining therein an expansion chamber having opposite sides with a gear and bearing chamber on one side of said expansion chamber and a bearing chamber on the opposite side with said partitions separating said gear and bearing chamber and said bearing chamber from said expansion chamber, at least two shafts each extending between said gear and bearing chamber and said bearing chamber through said partitions into said expansion chamber, said partitions forming passages for receiving said shafts, split seals provided in said shaft passages and separating said gear and bearing chamber and said bearing chamber from said expansion chamber, each said split seal comprising two parts, said partitions defining pressure equalization chambers located between said gear and bearing chamber and said expansion chamber and between said bearing chamber and said expansion chamber and extending across said shaft passages and separating said two parts of said split seals, oil filters arranged between said pressure equalization chambers and the adjacent said gear and bearing chamber and bearing chamber located on the same side of said expansion chamber for equalizing the pressure difference therebetween, at least one of said casing and partitions form bores opening into said pressure equalization chambers, and vacuum-tight inspection windows arranged in said bores.

4,465,443

PNEUMATIC POWER TOOL WITH SPEED GOVERNOR AND OVERSPEED SAFETY DEVICE

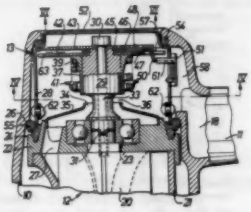
Karl G. Kardén, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 14, 1982, Ser. No. 434,179

Claims priority, application Sweden, Oct. 21, 1981, 8106210

Int. Cl.³ F01C *21/12*

U.S. Cl. 418—43 **16 Claims**



1. A pneumatic power tool, comprising:

an air driven rotation motor **(12)** supported in a portable housing **(10)**;

an air inlet passage **(18, 53, 36, 27)** in the housing;

a speed governor **(37–39)** for controlling the air flow through the inlet passage **(18, 53, 36, 27)**;

an overspeed safety device **(42–53, 60, 61)** arranged in series with and upstream of said speed governor **(37–39)** and comprising a speed responsive actuator **(42–50)** connected to the motor **(12)** and a valve means **(51, 53)** shiftable by said actuator **(42–50)** from a normally open condition to a closed condition at motor speeds above the speed range normally covered by the speed governor **(37–39)**; and

a cup-shaped shell insert **(28)** stationarily mounted in and relative to the housing **(10)** to form with the inner wall of the housing **(10)** a part of the air inlet passage **(18, 53, 36, 27)**;

said safety device valve means **(51, 53)** comprising at least one inlet aperture **(53)** in said shell insert **(28)** and a valve element **(51)** movably supported on said shell insert **(28)** for controlling the air flow through said apertures **(53)**; and

said apertures **(53)** extending through a wall of said shell insert **(28)** which is substantially parallel with the rotation axis of the motor **(12)**.

4,465,444

REVERSIBLE GEAR MACHINE

Wilhelm Dworak, Stuttgart; Hayno Rustige, Oberrot, and Günter Wolff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 425,002

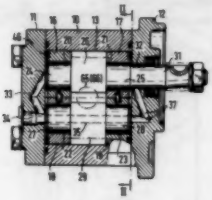
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217753

Int. Cl.³ F03C *2/08;* **F04C** *2/08, 15/00*

U.S. Cl. 418—132 **12 Claims**

1. A reversible gear machine for use as a gear pump or a gear motor, comprising housing means including a circumferential wall and two end walls together bounding an internal chamber and having two substantially aligned ports for admitting operating fluid into and discharging the same from said internal chamber at different pressures; two gears each having an external gear annulus centered on an axis and two oppositely facing axial end faces; means for so mounting said gears in said internal chamber for rotation about the respective axes that said gear teeth annuli mesh with one another at a meshing region situated between said ports, including two shafts each coaxially connected to one of said gears for rotation therewith and including two shaft portions each coaxially extending beyond

one of said axial end faces, and means for defining respective opening for receiving said shaft portions, including at least one substantially plate-shaped pressing element arranged between one of said axial end faces of said gears and that of said end walls of said housing means which faces said one axial end face for axial movement toward and away from said one end face and having opposite end surfaces one of which faces said one end face and the other away from said one end face, said defining means rotatably supporting said shaft portions on said housing means; and means for urging said pressing element toward said one end face during the operation of the gear machine, including at least one substantially eyeglassframe-shaped sealing component arranged at said other end surface of said pressing element and having a main portion spaced from said circumferential wall of said housing means and relatively



large-area extensions at the diametrically opposite regions of said main portion that extend from the latter into contact with said circumferential wall, said sealing component delimiting on said other end surface of said pressing element first and second pressure fields respectively communicating with one and the other of said ports, and substantially annular, relatively narrow, third pressure fields disposed between said sealing component and the respective shaft portions and subjected to the same pressure as that prevailing at said one end surface of said pressing element between the root circles of said gear teeth annuli and the respective shaft portions for assisting in displacing said pressing elements into sealing contact with the respective end faces of said gears during the operation of said gear machine so as to avoid excessive leakage of said operating fluid between first and second pressure fields.

4,465,445

ROTARY PIVOTED VANE PUMP

Manfred Sommer, Untergruppenbach-Vorhof, Fed. Rep. of Germany, assignor to Ursula Sommer geb. Heyd, Baden-Wurttemberg, Fed. Rep. of Germany

Filed Dec. 3, 1981, Ser. No. 327,057

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046155

Int. Cl.³ F04C *2/00, 15/00*

U.S. Cl. 418—152 **23 Claims**

1. A pivoted vane rotary pump in particular for food-stuffs and abrasive media comprising:

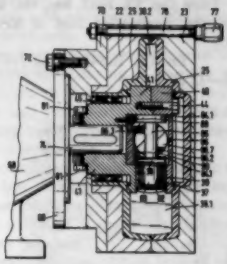
a split housing comprising two separable parts and having an intake and a discharge circumferentially spaced from one another by at least 90°,

a rotor rotatable in said housing and comprising a rotatable rotor hub and a plurality of vanes of corrosion resistant metal pivotally mounted on the periphery of said hub, one of said housing parts having a bore to rotatably receive said hub,

an annular channel formed between the outer periphery of said hub and the inner periphery of said housing, said channel comprising a transport portion extending, in the direction of rotation of the rotor, from said intake to said discharge and a sealing portion of reduced cross section extending from said discharge to said intake,

means for pivoting said vanes between a position in said transport channel portion in which they occupy the full cross sectional area of said transport portion and a position in said sealing channel portion in which they conform to the smaller cross sectional area thereof,

a lining of low friction plastic material fully covering the inner surfaces of said housing defining said annular channel and slidingly engaged by said vanes as said rotor rotates, said lining being secured to said inner surfaces and



protecting said housing from attack by corrosive media and from abrasive media being pumped, said plastic lining extending into said hub-receiving bore of said housing part, and

means providing a fluid-tight seal between said plastic lining and said hub.

4,465,446

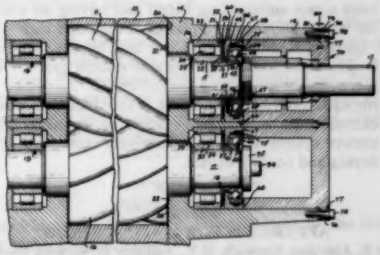
RADIAL AND THRUST BEARING MOUNTINGS PROVIDING INDEPENDENT LOADING

Paul Nemit, Jr., Waynesboro, Pa., and Joseph W. Pillis, Hagerstown, Md., assignors to Frick Company, Waynesboro, Pa.

Filed May 11, 1983, Ser. No. 493,484

Int. Cl.³ F01C *1/16*

U.S. Cl. 418—201 **4 Claims**



1. In a bearing assembly including a radial bearing having inner and outer races, and a thrust bearing having inner and outer races, fixed in spaced relation on a shaft, and a housing around said bearing assembly, the improvement comprising, said housing carrying said radial bearing by means of mounting its outer race, carrier means overlying and radially spaced from the outer race of said thrust bearing, said carrier means extending into the space between the outer races of said radial and said thrust bearing and engaging an inward wall of the outer race of said thrust bearing, compressible means between the outward wall of said carrier means and the inward wall of the inner race of said radial bearing, and means coaxial with said shaft holding said carrier means, said compressible means, and said radial bearing outer race means in fixed relationship, whereby the carrying of radial load by said thrust bearing is substantially eliminated.

4,465,447

APPARATUS FOR CONTINUOUSLY EXTRUDING AND DRYING/COOLING CEREAL BRAN

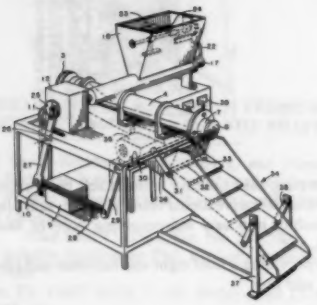
Hong Sik Cheigh; Chul Jin Kim, both of Seoul, and Dong Chul Kim, Euijeongbu, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Filed Sep. 13, 1982, Ser. No. 417,161

Claims priority, application Rep. of Korea, Feb. 11, 1982, 1013/1982[U]

Int. Cl.³ B29C *25/00, 17/10*

U.S. Cl. 425—72 R **7 Claims**



1. An apparatus for continuously extruding, enzyme inactivating, pelletizing and drying/cooling of cereal bran comprising:

a feed screw and surrounding barrel extending horizontally from the bottom of a hopper;

a main screw and surrounding barrel arranged at a right angle to and space below said feed screw and a connecting passage between said barrels a frustoconical top which is secured to the end of said main screw, said top being provided with a flight;

a housing surrounding said top secured at one end to said main screw surrounding barrel and having an extrusion die with a plurality of openings at the other end;

an agitating means positioned in said hopper, said means having an intermittently operable ratchet gear drive system connected with said feed screw;

a vibrational drying and cooling device mounted after said extrusion die at a negative angle of inclination; and a blower system which is operatively connected to said drying and cooling device.

4,465,448

APPARATUS FOR MAKING SHOES

John E. Aldridge, Norwich, N.Y., assignor to Norwich Shoe Co., Inc., Norwich, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,053

Int. Cl.³ B29F *1/14, 1/022*

U.S. Cl. 425—119 **26 Claims**

1. Apparatus for making shoes of the type comprising an injection molded sole which is bonded to a marginal edge portion of a string lasting made of a thermoplastic material, comprising:

a first last for holding said lasting;

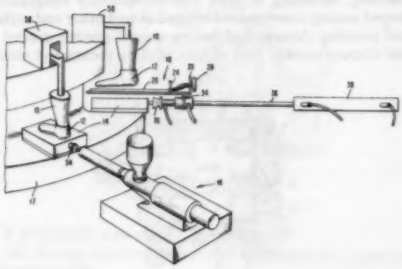
a sole mold having a cavity for receiving a molten thermoplastic material for forming said sole, said sole mold being adaptable to be closed at its top by said first last;

means for preheating the lower surface of said marginal edge portion of said lasting until it is in a tacky condition;

means for positioning said preheated lasting and said first last at said top of said sole mold;

means for injecting a molten thermoplastic material into said cavity of said sole mold whereby said molten material bonds to said marginal edge portion of said lasting to form a completed shoe, and

a cooling last comprising a second last for mounting and holding said completed shoe thereon after said shoe is removed for said first last, said cooling last having means for rapidly cooling said completed shoe to a temperature substantially below room temperature; whereby a secure bonding of said lasting with said injection molded sole is provided as well as maintaining the desired shape of the



completed shoe, said means for preheating said marginal edge portion of said lasting including radiant heater element means, a reflecting wall supported at one side of said heater element means for reflecting heat toward said lasting, and means for positioning said heater element means and reflecting wall adjacent said lasting for preheating thereof, and means for retracting said heater element means and reflecting wall from the preheating position, after heating said marginal edge portion of said lasting, to a retracted position away from said lasting.

4,465,449

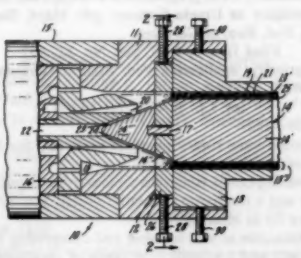
COEXTRUSION FEEDBLOCK FOR MAKING LIGHTWEIGHT, RIGID THERMOPLASTIC PIPE

Robert L. Hornbeck, Mineral Wells, W. Va., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Dec. 6, 1982, Ser. No. 447,352

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—131.1 **4 Claims**



1. A coextrusion feedblock apparatus for making multilayer thermoplastic pipe and tubing comprising a feedblock adapted to receive melted thermoplastic material from extruder means and feed such thermoplastic material to a coextrusion die, said die including a bushing member having a central, longitudinal bore therethrough, a cylindrical torpedo member disposed in said longitudinal bore and spaced therefrom to provide a first passageway for receiving the thermoplastic material from said feedblock, said feedblock including a cylindrical bore having a diverging taper adjacent an end thereof, said cylindrical torpedo being tapered at one end thereof, said tapered end of said

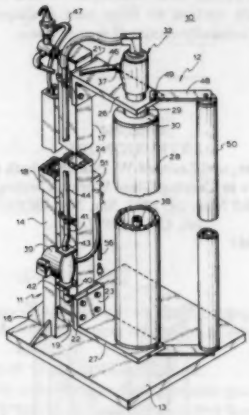
torpedo resting within but spaced from the diverging tapered portion of said cylindrical bore to provide a second passageway, and means for moving the tapered end of said cylindrical torpedo radially with respect to said diverging tapered portion to adjust said second passageway.

4,465,450

HEATED ROLLER DEVICE

Ira Dermansky, 300 Katherine St., Engelwood, N.J. 07631

Filed Apr. 7, 1983, Ser. No. 482,982
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—143 **10 Claims**



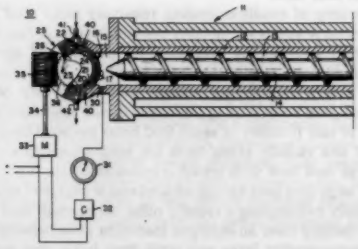
1. A web treating apparatus comprising a longitudinally extending tank, a longitudinally extending hollow roller transversely spaced from and rotatably supported by said tank, a heat transfer fluid contained within said tank and roller, means for circulating said fluid through and between said tank and roller and means for heating and regulating the temperature of said fluid to a predetermined value.

4,465,451

APPARATUS AND METHOD FOR CONTROLLING EXTRUSION BACK PRESSURE

Thomas E. Adderley, Jr., Norristown, Pa., assignor to Welding Engineers, Inc., King of Prussia, Pa.

Filed Jul. 21, 1982, Ser. No. 400,924
Int. Cl.³ B29F *3/06*
U.S. Cl. 425—145 **10 Claims**



1. In a face cutting apparatus having an extrudate feed means with an extrudate delivery end, a die means and a cutter means, an apparatus for controlling extrusion back pressure comprising:

(a) an upstream die having a plurality of areas, only one of the areas being able to align with the delivery end of said extrudate feed means at any one time, each of said areas having a plurality of extrusion orifices through which an extrudate is adapted to be extruded, the upstream die having a first area with orifices of a different size from the orifices of a second area;

(b) a downstream die adjacent said upstream die having a plurality of areas each having a plurality of extrusion orifices corresponding to, and being able to exactly align with, the areas and orifices of said upstream die;

(c) pressure sensing means for sensing the pressure adjacent said extrudate delivery end;

(d) means for moving one of said dies relative to the other die a distance less than the opening of the largest of said orifices without changing the distance between said dies, in response to a change in the pressure adjacent said extrudate delivery end; and

(e) means for simultaneously moving both of said dies relative to said extrudate feed means to align another of said areas with said extrudate delivery end without changing the relative positioning of said dies.

6. In a face cutting apparatus having an extrudate feed means with an extrudate delivery end, a die means and a cutter means, an apparatus for controlling extrusion back pressure comprising:

(a) a hollow outer cylindrical die having a plurality of areas, only one of the areas being able to align with the delivery end of said extrudate feed means at any one time, each of said areas having a plurality of extrusion orifices through which an extrudate is adapted to be extruded, the outer cylindrical die having a first area with orifices of a different size from the orifices of a second area;

(b) a hollow inner cylindrical die adjacent the interior surface of said outer die having a plurality of areas each having a plurality of extrusion orifices corresponding to, and being able to exactly align with, the areas and orificies of said outer die;

(c) pressure sensing means for sensing the pressure adjacent said extrudate delivery end;

(d) means for rotating one of said dies relative to the other die through an arcuate range in response to a change in the pressure adjacent said extrudate delivery end; and

(e) means for simultaneously rotating both of said dies relative to said extrudate feed means to align another of said areas with said extrudate delivery end without changing the relative positioning of said dies.

4,465,452

FOOD EXTRUDER

Osamu Masuzawa, Yokohama, Japan, assignor to The Nisshin Oil Mills, Limited, Japan

Filed Aug. 10, 1981, Ser. No. 291,329
Claims priority, application Japan, Aug. 21, 1980, 55-114926
Int. Cl.³ B21C *3/04, 11/18, 5/00*
U.S. Cl. 425—308 **7 Claims**

1. A food extruder comprising:

(a) a molding plate provided with a plurality of spaced perforations therethrough, with each perforation having a prescribed opening area;

(b) a drum having open upper and lower ends for engaging the molding plate and containing molding food material to be extruded through the molding plate;

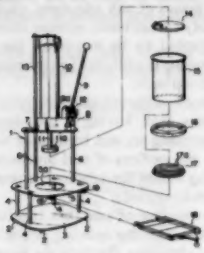
(c) a push cover disposable within the drum for pressing the molding food material against the molding plate;

(d) an oil hydraulic pump having a movable piston rod for applying pressure to the push cover;

(e) an operating member for supplying pressurized oil to the piston rod for moving same;

(f) a regulating mechanism for establishing the stroke length of the operating member;

(g) a cutting mechanism for cutting the molding food material extruded from the molding plate upon completion of the established stroke length of the operating member; and



(h) the perforations being disposed in discrete concentric regions of the molding plate wherein the number of perforations in each of said regions is calculated by the formula

$$N = \frac{P \cdot S_T}{S}$$

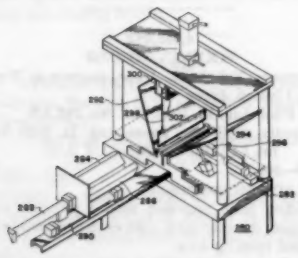
with p equal to a given constant, S_T is the overall area πR^2 of said molding plate and S is the open area of a single perforation, and a ratio of total opening area of the perforations to total surface area of the molding plate is determined for each of said discrete concentric regions of the molding plate so as to provide the molding plate with the perforations and to provide for the production of food material extrudates having a uniform length upon actuation of the operating member through its established stroke length.

4,465,453

APPARATUS FOR MANUFACTURING DISC RECORD PACKAGE

Robert L. Turner, Mooresville, and John J. Prusak, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1982, Ser. No. 443,998
Int. Cl.³ B28B *21/98*
U.S. Cl. 425—384 **14 Claims**



1. Apparatus for fabricating a U-shaped enclosure from a substantially rigid and flat plastic sheet comprising a narrow intermediate section interposed between a pair of panel portions; said apparatus including:

(A) a housing;

(B) a pair of substantially rigid and planar folding plates pivotally mounted to said housing about the respective one of a pair of spaced axes for motion between a spreadout position where said plates are substantially coplanar, and a folded-up position where said plates are juxtaposed to each other; said spreadout coplanar plates supporting said substantially rigid and flat plastic sheet; said folded-up juxtaposed plates defining a space corresponding to the exterior surfaces of said U-shaped enclosure;

(C) a substantially rigid and planar spacer plate being centrally mounted in said space; the exterior surfaces of said spacer plate defining the interior surfaces of said U-shaped enclosure;

(D) means for selectively heating the narrow intermediate section of said flat plastic sheet laid on said spreadout plates to make said intermediate section pliable; and

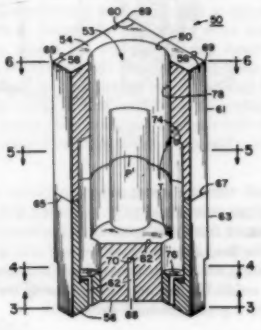
(E) means for folding said plates to cause the panel portions of said flat plastic sheet to bend about said heated pliable intermediate section to form said U-shaped enclosure about said centrally-mounted spacer plate.

4,465,454

EXTRUSION DIE

Francis R. Duerr, and Leonard W. Pokallus, both of Louisville, Ky., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 29, 1983, Ser. No. 480,017
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—461 **16 Claims**



1. An extrusion die for forming honeycomb structures comprising:

a body member having an inlet face and an outlet face axially spaced apart and generally parallel with each other;

a plurality of interconnected discharge slots axially formed in said body member and communicating with said outlet face;

a plurality of relatively large axially-extending feed holes formed in said body member and communicating with said inlet face;

a plurality of axially-extending relatively small feed holes formed in said body member communicating at one end in axially overlapping relation with portions of said discharge slots; each of said large feed holes communicating in axially overlapping relation with a plurality of said small feed holes at an opposite end of said small feed holes;

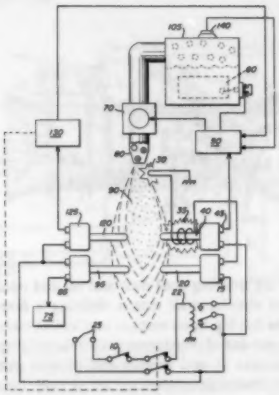
each of said plurality of small feed holes having a longitudinal axis radially offset from the longitudinal axis of the large feed hole with which it communicates;

each large feed hole having an inlet end at said inlet face and axially overlapping a radially offset set of small feed holes to thereby form an enlarged transition zone between said communicating large and small feed holes, and said respective large and small feed holes and said discharge slots forming a passageway through the die from the inlet face to the outlet face thereof.

4,465,455
START-UP/SHUT-DOWN FOR A HYDROGEN GAS BURNER

Stanley A. Meyer, 3792 Broadway Blvd., Grove City, Ohio 43123

Filed Sep. 24, 1982, Ser. No. 422,875
Int. Cl.³ F23N 5/00
U.S. Cl. 431—27 3 Claims



1. A start-up/shut/down circuit for activating and deactivating a non-ionic hydrogen generator burner system on demand, comprising:

a thermostatic control demand circuit,

a gas nozzle connected to the generated gas output of said hydrogen generator and a controlled size port in said nozzle for confining and controlling the hydrogen gas expelled therefrom,

an igniter positioned in the projective path of said nozzle,

an electrical heating element adjacent said igniter,

a voltage source and means connected to said source for applying voltage to said heating element for heating said igniter upon demand as predetermined by said demand circuit,

a heat sensing element, including heat responsive switching means, responsive to the temperature of said igniter electrical heating element,

an electrical control circuit connected to said heat responsive switching means,

a direct current voltage source and switching means for applying voltage from said voltage source to said hydrogen generator, said switch activated by said electrical control circuit upon said ignitor attaining a predetermined temperature, and

gas valve outlet, and pressure sensing means on said hydrogen generator,

said electrical control circuit, including means for actuating said outlet valve, to permit the generated gasses to be expelled from said nozzle upon said gasses generated by said hydrogen generator attaining a pretermined pressure,

said expelled gasses from said nozzle, upon contact with said heated igniter, being ignited into a continuous flame,

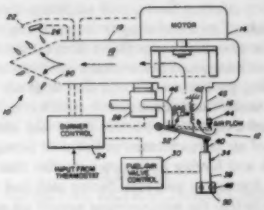
a second heat responsive sensory element positioned in the path of said ignited gasses including heat responsive switch means connected to said voltage source, disconnecting said voltage to said igniter electrical heating element upon said nozzle expelled gasses becoming ignited, and

upon completion of demand, as predetermined by said demand circuit, said electrical control circuit disconnecting said direct current voltage to said hydrogen generator.

4,465,456
VARIABLE FIRING RATE BURNER

Scott J. Hynek, Dover; Philip Dantowitz, Peabody, and Henry H. Fuller, Waban, all of Mass., assignors to Foster-Miller Inc., Waltham, Mass.

Filed Aug. 24, 1981, Ser. No. 295,574
Int. Cl.³ F23N 5/00
U.S. Cl. 431—62 11 Claims



2. A variable firing rate burner comprising:

(a) inlet means through which fuel and air flow, said inlet means including gas inlet means and air inlet means, said gas inlet means disposed within said air inlet means;

(b) valve means for controlling fuel/air ratio and the flow rate of said fuel and air flowing in said inlet means, said valve means movable between a first position and a second position, said fuel/air flow rate being greater at said second position than at said first position, said fuel/air ratio being maintained as said valve means is moved from said first position to second position;

(c) control means operatively connected to said valve means for moving said valve means to at least said first and second position;

(d) a chamber wherein said fuel and air are mixed; and

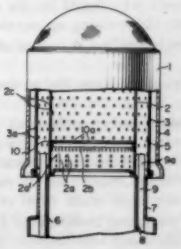
(e) means for igniting said fuel and air mixture;

(f) said air inlet means being air inlet conduit means and said gas inlet means being gas inlet conduit means, said gas inlet means being tangentially mounted within said air inlet conduit means and said valve means mounted to said inlet means adjacent the point of tangency of said gas inlet means and said air inlet means.

4,465,457
LIQUID FUEL BURNING DEVICE

Katsuhiko Ishikawa, Nara; Yoshitaka Kawasaki, Kadoma, and Motoo Yotsuya, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1981, Ser. No. 308,139
Claims priority, application Japan, Oct. 9, 1980, 55-141214; Nov. 10, 1980, 55-158619; Mar. 20, 1981, 56-40923
Int. Cl.³ F23D 5/00
U.S. Cl. 431—201 6 Claims



1. A liquid fuel burning device including an inner flame

sleeve having a plurality of air pores in its wall, an outer flame sleeve surrounding said inner flame sleeve at a distance from the latter to form therebetween an annular burning space, said outer flame sleeve also having a plurality of air pores formed in the wall thereof, and a wick having a fuel evaporating portion projected into the burning space, characterized by comprising at least one vertical row of air pores formed in the wall of at least one of said inner flame sleeve and said outer flame sleeve facing said fuel evaporating portion and an auxiliary wick for propagating the starting flame, said auxiliary wick being disposed at the side of said fuel evaporating portion adjacent said inner flame sleeve or said outer flame sleeve with a fuel impermeable member interposed between the auxiliary wick and said fuel evaporating portion, said vertical row of air pores being formed in the wall of said flame sleeve which is on the opposite side of said fuel evaporating portion from said auxiliary wick;

a plurality of air pores formed in the wall facing said auxiliary wick and having a diameter smaller than that of the air pores formed in said wall facing said fuel evaporating portion wherein the total opening area of air pores formed in a predetermined area of the wall facing said auxiliary wick is selected to be smaller than that of air pores formed in a predetermined area of the wall facing said fuel evaporating portion.

4,465,458

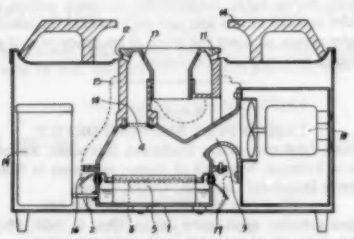
APPARATUS FOR BURNING LIQUID FUEL EQUIPPED WITH HEATING-TYPE FUEL VAPORIZER

Atsushi Nishino, Neyagawa; Kazunori Sonetaka, Hirakata, and Yasuhiro Takeuchi, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 131,801, Mar. 19, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,686

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **6 Claims**



1. An apparatus equipped with a heating-type fuel vaporizer for burning a liquid fuel and comprising:

a member immersed in the liquid fuel for drawing up the fuel in a liquid state, the drawing-up member being capable of drawing up the liquid fuel at a speed of at least 10 mm/30 seconds,

means for supplying the liquid fuel to the drawing-up member,

a heat generating member embedded in the drawing-up member in contact therewith for giving heat to the liquid fuel drawn up by the drawing-up member, said heat generating member being coated over the outer surface thereof with at least one layer made from at least one member selected from the group consisting of heat-resistant metal, heat-resistant alloy and heat-resistant metallic oxide; and

a combustion unit for burning the fuel evaporated and vaporized by the heat emitted by the heat generating member.

4,465,459

COAL DUST BURNER

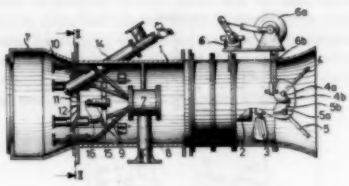
Erich Benninghoven, No. 66, Spreestrasse, 5650 Solingen 11, Fed. Rep. of Germany

Filed Jan. 4, 1982, Ser. No. 336,974

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1981, 3128334

Int. Cl.³ F23Q *9/00*

U.S. Cl. 431—284 **3 Claims**



1. A burner for burning coal dust and oil and comprising:

(a) elongated annular wall means defining a housing, said wall means having open suction and outlet ends at opposite upstream and downstream ends thereof respectively;

(b) blower means at said suction end of said annular wall means for directing a rotating air stream through said housing;

(c) valve means in said housing adjacent said blower means for controlling the velocity of said air stream through said housing and means for regulating said valve means;

(d) means defining a chamber in said housing between said blower means and said outlet end of said wall means, said chamber being spaced inwardly from said wall means:

(e) first duct means connected to said chamber for feeding a mixture of coal dust and air into said chamber;

(f) an atomizing nozzle in said housing between said chamber and said outlet end of said wall means, said atomizing nozzle being spaced inwardly from said wall means and directed toward said outlet end of said wall means;

(g) second duct means connected to said atomizing nozzle for feeding oil to said nozzle;

(h) an edddy plate in said housing between said atomizing nozzle and said outlet end of said wall means and spaced from said wall means, said eddy plate having a central hole aligned with said atomizing nozzle such that atomized oil from said atomizing nozzle may be directed downstream through said central hole in said eddy plate;

(i) a plurality of outlet pipes arranged in an annular configuration and extending in a generally downstream direction from said chamber about said atomizing nozzle and eddy plate towards said outlet end of said wall means;

(j) a burner head mounted on the end of each of said outlet pipes, said burner heads being arranged in an annular configuration disposed downstream of said eddy plate, each said burner head being rotatably and longitudinally adjustable on the end of the respective outlet pipe such that said mixture of coal dust and air from said chamber may be directed transverse to the direction of said air stream and at least in part across the downstream side of said eddy plate for the optimum mixture of said coal dust and air from said burner heads with said rotating air stream passing about and through the hole in said eddy plate to insure optimum combustion, said eddy plate serving as a flame bedding; and

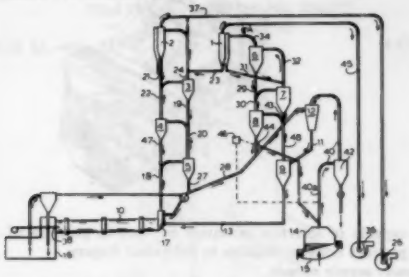
(k) an oil ignition auxiliary burner having a nozzle between said eddy plate and said outlet end of said wall means;

(l) whereby coal dust and oil may be burned alternatively in said burner.

4,465,460
PRODUCTION OF CEMENT CLINKER

Paul Cosar, Paris, France, assignor to Fives-Cail Babcock, Paris, France

Division of Ser. No. 370,540, Apr. 21, 1982, Pat. No. 4,421,563.
This application Sep. 29, 1983, Ser. No. 537,179
Claims priority, application France, May 15, 1981, 81 09692
Int. Cl.³ F27B 7/02
U.S. Cl. 432—106 5 Claims



1. An installation for producing cement clinker from dry raw material, which comprises

(a) a rotary kiln for producing the cement clinker and having an inlet for the raw material and a gas exhaust,

(b) multi-stage heat exchange means connected to the gas exhaust for preheating the dry raw material in contact with gas exhausted from the kiln,

(c) a calcination stage connected to the heat exchange means for calcining the preheated raw material before it is delivered to the rotary kiln,

(d) means for burning a solid fuel to produce a combustible gas feeding calories to the calcination stage,

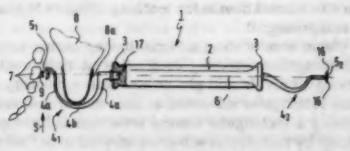
(e) a conduit connecting the solid fuel burning means to the calcination stage, the conduit having a vertical portion with a lower end connected to the solid fuel burning means whereby the combustible gas passes in an upward draft through the vertical portion, and

(f) a raw material distributor means for dividing the raw material into two fractions, the distributor means having an outlet connected to the lower end of the vertical conduit portion for delivering one of the raw material fractions into the vertical conduit portion whereby the one raw material fraction is suspended in the upward draft of the combustible gas before it is delivered to the calcination stage.

4,465,461
DENTAL-ORTHODONTIC DEVICE

Winfried Schütz, Ravensburger Ring 63, 8000 München 60, Fed. Rep. of Germany

Filed Aug. 12, 1982, Ser. No. 407,427
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1981, 3132242; Jan. 28, 1982, 3202708
Int. Cl.³ A61C 7/00
U.S. Cl. 433—3 11 Claims

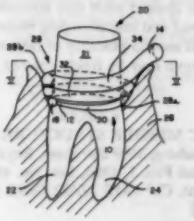


1. A dental-orthodontic device to position and angularly align a slotted adhesive bracket, which has been placed on a tooth surface in an oral cavity of a patient, before the adhesive has set, comprising a substantially straight handle and a working head shaped to engage the slot of said bracket to position and angularly align said bracket on said tooth surface, said instrument being U-shaped between said handle and said working head to form a U-shaped supporting yoke wherein, during the use of the instrument, the corners of the mouth and the cheek of the patient may be received by the U-shaped supporting yoke with the handle being disposed outside of the oral cavity and perpendicular to the tooth surface, said working head being disposed on an extension of the central axis of said handle, said working head being constructed as an elongate wedge member of triangular cross section and extending approximately at right angles to the central axis of said handle, the length of the wedge member being sufficient to allow the desired angular alignment and positioning of said bracket.

4,465,462
GINGIVAL RETRACTION CORD

Verne E. Ticknor, 333 N. Shore Dr., South Haven, Mich. 49090

Filed Apr. 27, 1983, Ser. No. 489,190
Int. Cl.³ A61C 5/14
U.S. Cl. 433—136 11 Claims



1. A flexible, nondisintegrating gingival retraction cord generally circular in cross section and including a starter end and a remote opposite end, the length of said cord being at least approximately 50 mm so that said cord can be wrapped about a tooth two or more times, said starter end having a first diameter of approximately 0.8 mm, said opposite end having a second diameter of approximately 1.3 mm, and said cord increasing generally uniformly in diameter from said starter end to said opposite end, whereby, as said cord is spirally packed about a tooth beginning with said starter end, said cord creates a V-shaped gingival retraction crevice between the tooth and surrounding gum.

4,465,463
DRIVING TOOL

Rune Hæson Olde, Klintvägen 58, S-752 46 Uppsala, Sweden

Filed May 6, 1983, Ser. No. 492,331
Claims priority, application Sweden, May 10, 1982, 8202927
Int. Cl.³ A61C 3/00
U.S. Cl. 433—141 5 Claims

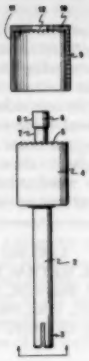
1. A tool for screwing a rod into a tooth comprising

a stem, one end of which includes means for operatively engaging said rod and the other end of which includes an enlarged cylindrical head, the end of said head furthest from said engaging means including a first plurality of saw-tooth-like ridges;

a cylindrical sleeve one end of which is open and the other end of which is closed, the surface of said closed end internal of said sleeve including a second plurality of saw-tooth-like ridges and said closed end including an aperture through the center thereof, said enlarged cylindrical head being positioned within said cylindrical sleeve such that said first and second plurality of ridges are adjacent one another; and,

a pin axially extending from said end of said head through

said aperture, the end of said pin outside of said sleeve including means to maintain said head within said sleeve and to allow said sleeve to freely reciprocate axially relative to said pin to engage said first and second plurality of



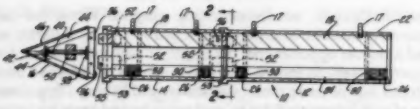
ridges when desired such that rotation of said sleeve rotates said head and said engaging means, and to disengage said first and second plurality of ridges when desired such that said sleeve may be freely rotated about said pin.

4,465,464

BALLISTIC MISSILE STRUCTURE SIMULATOR

George R. Schoenberg, 2698 Burnham, Royal Oak, Mich. 48073

Filed Feb. 3, 1983, Ser. No. 463,417
Int. Cl.³ F41F 27/00; G09B 9/00
U.S. Cl. 434—12 8 Claims



1. A simulated missile comprising a plurality of separately-formed elongated missile stages adapted to be connected together in end-to-end relation to form a complete simulated missile; two of said missile stages being cylindrical, and a third missile stage being axially convergent; each cylindrical stage comprising a cylindrical pipe defining the stage outer contour, three structural beams of similar cross-section arranged symmetrically within the pipe, with edge areas thereof engaging the pipe interior surface, and cement filler occupying selected sections of the pipe interior length; the quantity of cement being sufficient to cause the respective cylindrical stage to have approximately the same total weight as the missile stage being simulated; the location of the cement being selected to cause the center of gravity of the stage to approximately coincide with that of the missile stage being simulated.

4,465,465

COMMUNICATION DEVICE FOR HANDICAPPED PERSONS

Bailey Nelson, P.O. Box 425, Cedar Crest, N. Mex. 87008

Filed Aug. 29, 1983, Ser. No. 527,111
Int. Cl.³ G09B 5/00
U.S. Cl. 434—112 17 Claims

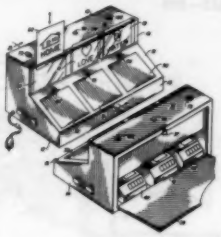
1. A communications device for handicapped persons including in combination:

a housing;

first means mounted in said housing for storing and reproducing a plurality of pre-recorded audio message segments;

a plurality of visual displays each corresponding respectively to a different one of said pre-recorded audio message segments;

a plurality of substantially horizontal, relatively large, paddle switch actuator members associated with corresponding ones of said visual displays and said audio message segments, said paddle switch actuator members being



capable of selective actuation by various portions of a person's body in addition to individual fingers;

power supply means;

a plurality of switch means each controlled by a different one of said paddle switch actuator members and electrically interconnecting said first means and said power supply means to cause said first means to reproduce a selected one of said pre-recorded audio message segments corresponding to a selected paddle switch actuator member.

4,465,466

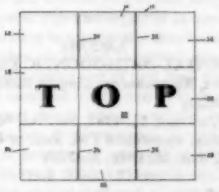
Patent Not Issued For This Number

4,465,467

EDUCATIONAL DEVICE FOR TEACHING CHILDREN TO READ

Nicholas Exelby, 13 Victoria Rd., Burgess Hill, Sussex RH 15 9QS, England

PCT No. PCT/GB81/00184, 371 Date May 4, 1982, 102(e) Date May 4, 1982, PCT Pub. No. WO82/00828, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 8, 1981, Ser. No. 380,670
Claims priority, application United Kingdom, Sep. 10, 1980, 8029266
Int. Cl.³ G09B 17/00
U.S. Cl. 434—172 5 Claims



1. An educational device for teaching children to read, said device comprising:

(a) a planar area of sheet material having corner zones;

(b) dividing lines crossing each other at right angles and serving to divide said planar area into a plurality of discrete rectangular sub-areas, at least one of said sub-areas forming a rectangular central area bounded along edges thereof by rectangular sub-areas adapted to be folded over as flaps to cover at least part of the said central area, and at least some of said dividing lines being in the form of cuts to allow any selected one of said flaps to be folded over without displacing a flap adjacent to it; and

(c) printed reading matter comprising letters of the alphabet on both the front and back surfaces of the planar area, but on only one side of each sub-area, each letter of said reading matter being printed in at least two contrasting colours;

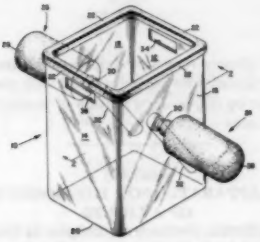
said sub-areas including at least four corner flaps at the corner zones of said planar area.

4,465,468

UNDERWATER VIEWING DEVICE

Edward F. Deacy, Box 413, Cruz Bay, St. John, V.I. 00830

Filed Oct. 15, 1982, Ser. No. 434,477
Int. Cl.³ B63C *11/48*
U.S. Cl. 441—135 **4 Claims**



4. An underwater viewing device comprising: an open topped, generally rectangular, one-piece walled container made of inflexible plastics material; a peripheral surface defined about said open top of said container; a padding of soft, flexible material located entirely about said peripheral surface against which the face of a user may be comfortably placed; a pair of handles on each side of the container, each handle comprising a short length of tubing exteriorly through a side of the container and a flexible, squeezable bulb mounted on the tubing, the tubing including a tube extension interiorly of the container angled downwardly towards a front, bottom area of the container whereby when the bulb is periodically squeezed, air is caused to circulate from the front to the rear of the container; and ventilation means comprising an opening defined through the upper, forward wall of the container and a second opening defined through the upper, rear wall of the container; the container being so constructed that said handles will be positioned at the free floating waterline of the device and function as stabilizing outriggers when the device is floated freely in water.

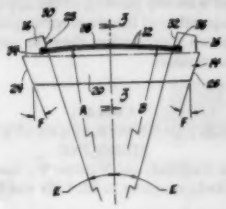
4,465,469

DRIVE BLOCK FOR A CONTINUOUS METAL BAND DRIVE BELT

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1982, Ser. No. 380,682
Int. Cl.³ F16G *5/00, 5/16*
U.S. Cl. 474—201 **3 Claims**

1. A metal band and block for a continuous belt drive mechanism comprising: a continuous metal band having a constant radius curved transverse cross section viewed in an axial plane; and a plurality of wedge blocks disposed in abutting relation on said metal band, each wedge block having a transverse arcuate belt support surface having a radius dimension substantially equal to the constant radius curve of the metal band, an arc length dimension substantially equal to the axial width of the metal band, and each wedge block also having a band entering opening having an outer aperture dimensioned to have a minimum span equal to 79% of the metal band width, an inner aperture dimensioned to have a minimum span width of 76% of the metal band width and side walls converging from the outer to the inner aperture whereby the band may be flexed in the radial direction to enter the band opening during assembly without yield stress of the band being exceeded such that after assembly the inner surface of the continuous metal band rests on said arc length dimension, and retaining slots formed integrally in said wedge block and being disposed between said



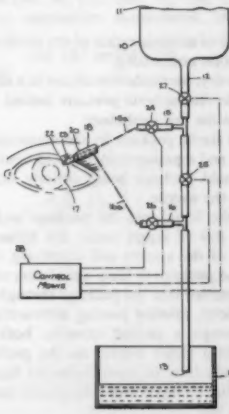
inner aperture and said belt support surface arc length, said slots having laterally extending surface spaced from said belt support surface and having a combined minimum extent equal to 20% of the width of said metal band.

4,465,470

APPARATUS FOR AND METHOD OF IRRIGATING AND ASPIRATING AN EYE

Charles D. Kelman, 269-70 Grand Central Pkway., Floral Park, N.Y. 11005

Filed Jun. 4, 1982, Ser. No. 385,010
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—27 **13 Claims**



1. Apparatus for irrigating and aspirating an eye, utilizing gravity flow, comprising:

a fluid container containing irrigation fluid disposed at an elevation higher than the elevation of the eye;

a fluid conduit having an open end and extending from said fluid container to said open end disposed at and terminating at an elevation lower than the elevation of the eye, said conduit having two spaced conduit branch means along said conduit for supply and removal of fluid from the eye;

first valve means in a first of said two spaced conduit branch means for controlling fluid flow through said first conduit branch means;

second valve means in said conduit between said two spaced conduit branch means for controlling fluid flow through said conduit between said conduit branch means;

third valve means in the second of said conduit branch

means for controlling fluid flow through said second conduit branch means; and

means for individually opening and closing said valve means for priming the apparatus with fluid from the fluid container, for irrigating the eye, and for irrigating and aspirating the eye whereby priming of the apparatus, and irrigation and aspiration of the eye is accomplished without any external pump source other than the gravity flow of the fluid in the conduit.

4,465,471

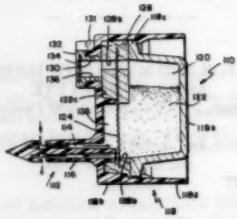
INTRAVENOUS ADMINISTRATION SYSTEM FOR DRY MEDICINE

Dale C. Harris, Fairland, and William W. Hargrove, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 296,335, Apr. 26, 1981, abandoned. This application Jul. 26, 1982, Ser. No. 401,874

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—56 **9 Claims**



3. A method of administration of dry medicine intravenously in liquid solution comprising:

enclosing a dry, particulate medicine in a sterile package that is open to atmospheric pressure behind a liquid-pervious barrier to the dry medicine,

placing the sterile package in communication with a source of liquid and a passageway for said liquid to the vein of a patient, said package being entirely below the level of liquid in the source,

admitting the liquid into the package and maintaining the package full of liquid under the influence of the fluid pressure of the system and dissolving the dry medicine within the package to form a medicine solution, the liquid being admitted into the package through one conduit and the medicine solution passing outwardly to the passageway through a second conduit, both conduits being formed in a single needle on the package, said needle intercepting flow of liquid from the liquid source to the vein so that all liquid from the source passes through said package, and

allowing the solution of medicine and liquid to pass continuously through the barrier and from the package into the passageway while providing a continuous flow of replacement liquid into the package until the medicine solution is exhausted from the package.

4,465,472

SYRINGE CARTRIDGE AND METHOD

Ray Urbaniak, Boca Raton, Fla., assignor to American Hospital Supply Corp., Evanston, Ill.

Filed Nov. 22, 1982, Ser. No. 443,647

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—122 **14 Claims**

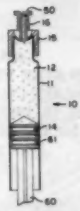
1. A syringe comprising, in combination,

a cylindrical cartridge having two open ends,

movable plunger means for closing one end of the cartridge,

a first closure means for the other end of the cartridge for displacement of product within the cartridge to achieve predetermined head space therein,

and a second closure means removably secured to said first closure means,



said second closure means having reseal means interacting with said first closure means to reseal with predetermined head space by displacing a portion of product in the first closure means.

4,465,473

INJECTION APPARATUS FOR THE DOSED DELIVERY OF A LIQUID

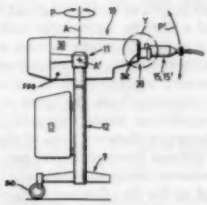
André Riiegg, Zürich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Nov. 1, 1982, Ser. No. 438,456

Claims priority, application Switzerland, Nov. 24, 1981, 7500/81

Int. Cl.³ A61M *5/20*

U.S. Cl. 604—154 **5 Claims**



1. An injection apparatus for the dosed delivery of a liquid comprising:

an injector housing having a front end;

a retaining member arranged at said front end of said injector housing;

said retaining member being adapted to exchangeably retain therein injection syringes;

each said injection syringe comprising a hollow cylinder having a first end, a second end and a defined cross-section and including a piston member guided for displacement therein intermediate said first and said second ends;

said first end of said hollow cylinder being provided with a flange member;

at least one sensing bracket journaled in said retaining member such as to enable deflections of said sensing bracket;

said sensing bracket having a sensor member at one end thereof for contacting said flange member at said first end of said hollow cylinder and having an actuator member at the other end thereof; and

at least one switch operatively associated with said actuator member of said at least one sensing bracket;

whereby said sensing bracket in a deflected position thereof actuates said switch which is capable of transmitting a signal dependent on the cross-section of said cylinder for

controlling the rate of advancement of said piston member of said injection syringe.

4,465,474

INJECTOR FOR MEDICAL USES HAVING AN IMPROVED AUTOMATIC SWITCH-OFF SYSTEM

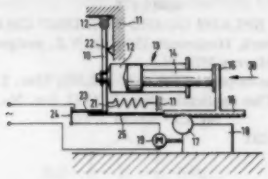
Robert Mardorf, and Sigfried Hebberg, both of Melsungen, Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrücke, Switzerland

Filed Dec. 17, 1982, Ser. No. 450,738

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 8137235[U]

Int. Cl.³ A61M *5/20*

U.S. Cl. 604—154 **9 Claims**



1. In an injector for medical uses comprising a housing, a first holder mounted to said housing for attachment of a cylinder of a syringe, a motor driven slide movably mounted to said housing for displacement relative to said housing in a first direction toward said first holder and in an opposite second direction away from said first holder, a second holder mounted to said slide for attachment to a piston of said syringe wherein displacement of said slide results in corresponding displacement of said second holder, switching means for turning off said motor wherein said switching means is actuated by first actuating means responsive to the movement of said slide to a selected position corresponding to the maximum mutual approach of said first and second holders; the improvement comprising:

said first holder is movably mounted to said housing for movement relative to said housing parallel to the direction of movement of said slide;

second actuating means connected to said first holder for displacement therewith wherein said switching means is actuated by said second actuating means upon displacement of said first holder a selected distance in said first direction;

resilient means connected to said housing and said first holder for applying a selected force to said first holder for preventing displacement of said first holder relative to said housing in said first direction; wherein,

applying a force greater than said selected force to said first holder in said first direction causes movement of said first holder in said first direction counter to said resilient means force whereby upon displacement of said first holder said selected distance in said first direction said switching means is actuated by said second actuation means.

4,465,475

INJECTOR FOR MEDICAL USES

Robert Mardorf, and Sigfried Hessberg, both of Melsungen, Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrücke, Switzerland

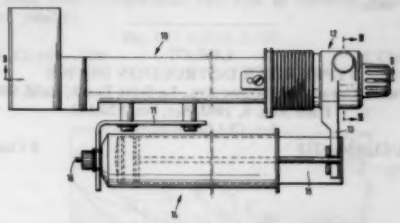
Filed Dec. 8, 1982, Ser. No. 447,968

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150623

Int. Cl.³ A61M *5/20*

U.S. Cl. 604—155 **9 Claims**

1. In an injector for medical uses including an elongated housing containing a spindle drive having a threaded spindle, a first holder mounted on said housing for attachment to one part of a syringe, a slide movably mounted to said housing for linear motion relative to the direction of elongation of said housing, a motor for driving said slide via said spindle drive, a second holder mounted on said slide for attachment to the other part of the syringe, and means for interrupting the transmission of force from said motor, the improvement comprising:



said spindle drive includes a ball gear comprising a nut surrounding said threaded spindle wherein said nut is in engagement with the threads of said spindle through balls; and

coupling means for non-rotationally coupling said spindle with said slide in at least one direction of rotation of said spindle.

4,465,476

INJECTION SYRINGE FOR INJECTING TWO LIQUIDS

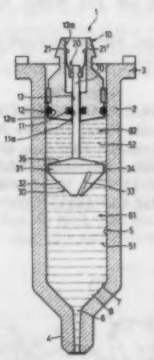
Hermann Gähwiler, Zürich, Switzerland, assignor to Contraves AG, Zürich, Switzerland

Filed Dec. 10, 1982, Ser. No. 448,705

Claims priority, application Switzerland, Dec. 22, 1981, 8184/81

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—191 **16 Claims**



1. An injection syringe for the successive injection of two liquids into the blood vessels of living bodies, comprising:

a cylinder having opposed ends and a cylinder axis;

one of said opposed ends of said cylinder defining an outlet end containing an outlet opening;

a piston insertable into said cylinder and slidably movable within said cylinder;

said piston having an axial bore;

a separator piston member disposed in said cylinder intermediate said piston and said outlet opening to subdivide the cylinder into two separate compartments each holding one of the two liquids in the filled state of said cylinder;

a spacer rod extending substantially in parallelism to said cylinder axis and arranged at said spearator piston member;

retaining means for releasably holding said spacer rod at said piston; and

said piston, after ejection of a first one of the two liquids and automatic release of said retaining means, being movable in a substantially liquid-tight manner relative to said spacer rod in order to eject a second one of the two liquids.

4,465,477

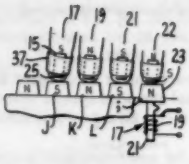
TYPEWRITER INSTRUCTION DEVICE

Jairus A. Gavaar, 105 Solano Ave., La Selva Beach, Calif. 95076

Filed Aug. 4, 1983, Ser. No. 520,143

Int. Cl.³ G09B *13/00*

U.S. Cl. 434—233 **5 Claims**



1. A machine for teaching typing comprising in combination:

(a) a keyboard of the usual typewriter configuration with alphanumeric keys,

(b) an electromagnet associated with each of said keys,

(c) means for maintaining pieces of a ferromagnetic material on the tips of the fingers of a student to be instructed,

(d) means for indicating to the student which key is to be struck,

(e) means for simultaneously energizing the corresponding electromagnet of the key which has been indicated, whereby

(f) the student's finger will be attracted to the correct key.

4,465,478

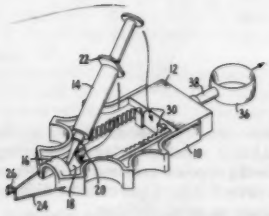
SYRINGE FORCE AMPLIFICATION DEVICE

Eric E. Sabelman, Menlo Park; Timothy A. Koogle, Redwood City, and William Kennedy, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Filed Oct. 14, 1982, Ser. No. 434,223

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—224 **14 Claims**



1. Apparatus for amplifying the manual force applied to compress the plunger of a syringe into its barrel, comprising:

a frame having means for attachment to the barrel of a syringe;

a carriage mounted on said frame so as to be moveable relative thereto along the longitudinal axis of a syringe attached to the frame, said carriage including means for engaging the plunger of a syringe;

a gear rotatably mounted on said carriage and operatively engaging said frame such that rotation of said gear induces movement of said carriage along said axis; and

manually actuatable means for rotating said gear with a mechanical advantage such that the linear force applied to the plunger of a syringe connected to said carriage is greater than the force that is manually applied to rotate said gear.

4,465,479

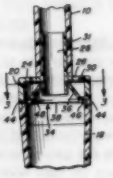
AIR VENT SPLASH GUARD FOR DRIP CHAMBER

Charles E. Meisch, Hasbrouck Heights, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 243,361, Mar. 13, 1981, abandoned. This application Sep. 8, 1982, Ser. No. 415,996

Int. Cl.³ A61M *5/16*

U.S. Cl. 604—251 **12 Claims**



8. In a drip chamber, a top, a peripheral chamber wall depending from said top, drainage tube mounting means through said top for receiving and positioning an end of a drainage tube in communication with said chamber, air passing vent means through said top laterally of said drainage tube mounting means, and a splash guard positioned within said chamber below said top in splash-deflecting underlying relation to said vent means, said drainage tube mounting means including an aperture through said top with a drip sleeve depending from said top in surrounding relation to said aperture, said drip sleeve being located to one side of said vent means, said splash guard including an upper end positioned adjacent said top in spaced relation to said vent means, and a lower end portion vertically spaced below said top, the aperture through the top, and the depending sleeve, being centrally located, said vent means surrounding said aperture and the upper end of said splash guard.

11. For use in a drip chamber having a top with a central depending drip sleeve opening therethrough and filtered vents peripherally thereabout, a splash guard, said splash guard including an elongated peripheral wall terminating in an upper end peripherally engageable with the top about the drip sleeve outward of the vents, and a lower end on said peripheral wall positionable in outwardly surrounding relation to the sleeve in spaced relation below the top, said lower end of said peripheral wall including an inwardly projecting peripheral flange, and air passing vent means defined through said flange.

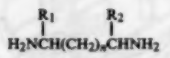
4,465,480

BLOOD TRANSFUSION TUBES AND DEVICES FOR USE IN CONTACT WITH HUMAN BLOOD

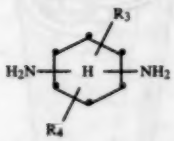
Masakazu Tanaka, and Ken Murayama, both of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 333,186
Claims priority, application Japan, Sep. 2, 1981, 56-138734
Int. Cl.³ A61M 5/00
U.S. Cl. 604—264 5 Claims

1. A device for use in contact with human blood, consisting of or covered with a segmented polyether polyurethane urea obtained by chain-extension of an isocyanate-terminated prepolymer, said prepolymer being obtained by reacting a polyoxyalkylene diol having a molecular weight of from 650 to 3000 with a diisocyanate, said chain-extension being conducted with a diamine represented by the following formula (I) or/and a diamine represented by the following formula (II):



(I)



(II)

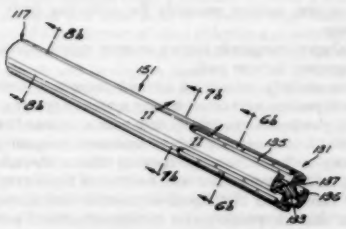
wherein each of R_1 and R_2 is an alkyl group having 1 to 5 carbon atoms or one of R_1 and R_2 is a hydrogen atom and the other is an alkyl group having 1 to 5 carbon atoms, each of R_3 and R_4 is a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and n represents 0 or an integer from 1 to 4.

4,465,481

SINGLE PIECE WOUND DRAIN CATHETER

Larry W. Blake, Costa Mesa, Calif., assignor to Innovative Surgical Products, Inc., Santa Ana, Calif.

Continuation-in-part of Ser. No. 238,640, Feb. 26, 1981, Pat. No. 4,398,910. This application Apr. 26, 1982, Ser. No. 371,941
Int. Cl.³ A61M 25/00
U.S. Cl. 604—280 14 Claims



1. An elongate catheter of one piece construction for draining fluid from or supplying fluid to an environment comprising:

a drain segment of substantially constant cross section throughout its length having plural elongate fluid openings in the form of grooves extending throughout the length of the sidewall thereof, said openings spaced circumferentially from one another;

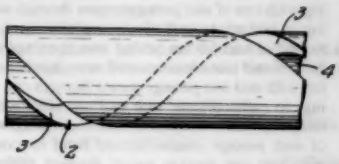
a second transition segment with closed sidewalls in fluid communication with said elongate openings of said drain segment, having an perimeter size, in cross section, substantially the same as that of said drain segment, but having an interior cross section different from that of said drain segment.

4,465,482

SUCTION DRAINAGE TUBE

Klaus Tittel, Mainz, Fed. Rep. of Germany, assignor to Gerhard Hug GmbH, Umkirch, Fed. Rep. of Germany

Continuation of Ser. No. 389,255, Jun. 17, 1982, abandoned, which is a continuation of Ser. No. 127,762, Mar. 6, 1980, abandoned. This application Dec. 28, 1983, Ser. No. 564,765
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 2908952
Int. Cl.³ A61M 25/00
U.S. Cl. 604—280 5 Claims



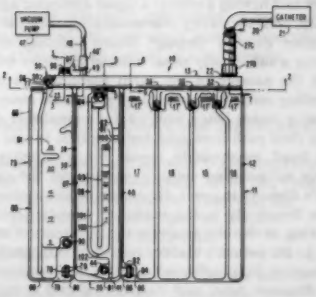
1. A suction drainage tube having a distal and proximal end means for implantation into a living body and for connection to a suction device for medical purposes, said tube consisting of a length of flexible tubing having a substantially cylindrical wall made of a single constant thickness of plastic tubing and said distal end portion provided with at least one substantially helically shaped open means slot passing completely through said cylindrical wall at said distal end running for the complete length of said distal end portion and terminating with said open slot means end at the tip of said portion of said tubing wall, said slot means having a constant width, in the unstressed condition of drainage tube, substantially less than the width of the helical land strip constituted by the slotted end portion means and having distal end means of said tubing wall and capable of having its width changed and its edges relatively shifted by partial rotation for clearing helical slot obstructions by a twisting force applied at or near the proximate end of said tube remote from the slotted end portion when the tube is implanted in a living body.

4,465,483

MODULAR DRAINAGE APPARATUS

Eugene E. Weilbacher, New Philadelphia, Ohio, assignor to Snyder Laboratories, Inc., Dover, Ohio

Filed Jun. 8, 1982, Ser. No. 386,242
Int. Cl.³ A61M 1/00
U.S. Cl. 604—317 23 Claims



21. A modular apparatus including:

three bodies;

each of said bodies including at least one chamber having an upper wall;

support means to slidably support each of said bodies on said support means;

body position control means supported by said support means to position each of said bodies at a selected position on said support means and to retain each of said bodies at the selected position on said support means;

said upper wall of said one chamber of each of said bodies having at least one opening therein;

said support means having two passage means;

a first of said bodies having said one chamber communicating with one of said passage means through said one opening in said upper wall of said one chamber;

a second of said bodies having two openings in said upper wall of said one chamber, said one chamber cummunicating with said one passage means through one of said openings to communicate with said one chamber of said first body and said one chamber communicating with the other of said passage means remote from its communication with said one passage means through the other of said openings;

and a third of said bodies having said one chamber communicating with said other passage means through said one opening in said upper wall of said one chamber to communicate with said one chamber of said second body.

4,465,484

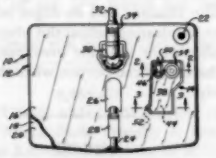
COLLECTION DEVICE FOR BODY FLUIDS

James P. Cianci, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 149,787, May 14, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,985

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—317 **5 Claims**



1. A device for collecting urine from a patient, comprising:

a container having a drainage tube, a chamber to receive urine and a connector between the drainage tube and the chamber; and

receptacle means permanently secured to a wall of the container and having a cavity, a liquid antiseptic agent in said cavity, with the cavity communicating with the container chamber directly through means defining an opening having a sufficiently small internal diameter so as to impede the passage of the agent therethrough under surrounding ambient pressure, said receptacle means and said opening means being isolated and completely out of the urine flow path from said drainage tube to said collector, and hand manipulable means for generating pressure above surrounding ambient pressure in the cavity at a user's demand to cause dispensing of said antiseptic agent from the cavity to the container chamber through said opening, to thereby minimize the possibility of contamination to the patient's bladder caused by retrograde bacteria movement from collected urine in the container through the drainage tube, said diameter of said opening means being sufficiently small to permit passage of liquid antiseptic agent therethrough only upon actuation of said hand manipulable means, said receptacle means and cavity being completely sealed from the ambient atmosphere when the antiseptic agent is being dispensed from the cavity into the container.

4,465,485

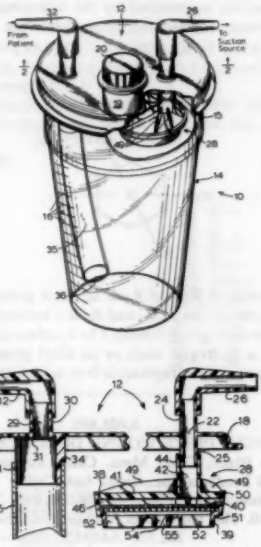
SUCTION CANISTER WITH UNITARY SHUT-OFF VALVE AND FILTER FEATURES

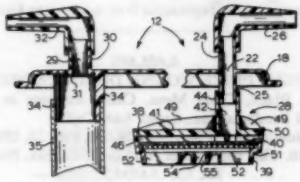
James S. Kashmer, Budd Lake; John K. Klimbach, Wayne, and Randall P. Vendetti, Lincoln Park, all of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 241,153, Mar. 6, 1981, abandoned. This application May 16, 1983, Ser. No. 494,745

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—320 **27 Claims**





1. A suction canister assembly for collecting body fluids comprising:

a cup-shaped receptacle having an open mouth portion and an opposed bottom wall;

a cover sealably connected to said receptacle over said mouth portion, said cover having a suction opening therethrough adapted to communicate with a source of vacuum applied to the exterior side of said suction opening, and having a liquid passage opening means therethrough adapted to communicate with a source of liquid exterior to said canister so that liquid is passable therethrough to enter said receptacle under suction conditions provided through said suction opening by said vacuum source; and

a unitary shut-off valve/filter element connected to the interior side of said suction opening lying within a single suction path extending only from the interior of said receptacle to said suction opening so that all gases are exchanged between said receptacle and said suction opening through said element, said element adapted to lie substantially parallel to the free upper surface of liquid which enters said receptacle when said bottom wall rests on a substantially horizontal surface, said element oriented within said receptacle to be contacted by liquid in said receptacle which rises to a predetermined level, said element being porous with a maximum pore rating of about 0.5 micron for filtering particulate matter including microorganisms from gas passing therethrough, said element capable of developing sufficiently high surface tension

under liquid contact to serve as a barrier against liquid passage therethrough at pressure differentials across said element up to 14.7 psi, said element adapted to terminate suction through said suction opening at suction pressures up to 14.7 psi when liquid rises in said receptacle to completely cover said element.

4,465,486

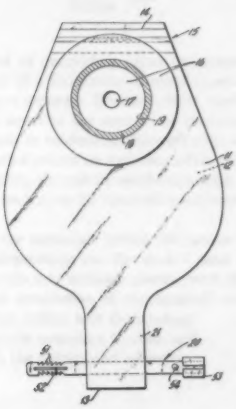
CLOSURES FOR OPEN ENDED OSTOMY POUCH

John A. Hill, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 864,895, Dec. 27, 1977, Pat. No. 4,403,991, which is a continuation-in-part of Ser. No. 851,099, Nov. 14, 1977, abandoned. This application Sep. 30, 1982, Ser. No. 431,438

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—337 **4 Claims**



1. An ostomy appliance comprising a generally pear shaped pouch formed from two polymeric film surface permanently bonded along a majority of their length, each of said pouch polymeric film surfaces being a laminate of about 3 mils thickness of an outer and inner layer of ethylene vinyl acetate having a core of a copolymer of vinyl chloride and polyvinylidene chloride, one of said polymeric film surfaces being the skin side of said pouch and having an opening which fits around the stoma, the other polymeric film surface being the outer side of said pouch, a faceplate permanently bonded to the skin side of the pouch around said stomal opening, said faceplate having a centrally located opening which is expanded to fit the appliance snugly around the stoma and comprises a thin disk shaped film of polymeric material of from about 2 to 8 mils thickness having an adhesive composition which includes a pressure sensitive adhesive component and one or more hydrocolloids on its exposed surface and wherein the bond between said disk shaped film and said skin side of the pouch does not extend to the outer peripheral edge of said faceplate, said pouch including a narrow tail portion having an open bottom through which the contents of said pouch can be drained, and resealable bottom closure means comprising a semi-rigid folding bar of high density polyethylene of from about 5 to about 10 mils or low density polyethylene of from about 10 to about 25 mils thickness permanently attached to the outer side of said pouch at the narrow tail portion near said bottom opening, said folding bar extending transversely across and beyond the width of said pouch tail portion and having interlocking closure elements on said extended portions of said folding bar wherein said interlocking closure elements are serrated top and bottom edges and a centrally located groove on one extended portion of said folding bar and on the other extended portion of said folding bar a button like element and on the end of said bar a rigid element that partially encircles said bar so as to form a channel wherein the bottom opening is sealed by rolling the tail portion of said pouch over said folding bar and bending the extended portions of said folding bar so that said button like member is forced into said groove and said serrated edges lock against the sides of said channel, said folding bar including said rigid element and said button like element are formed as a single unit, said button like element and rigid element are on the skin side of said folding bar and said button like element is dimensioned to fit tightly within said groove.

4,465,487

CONTAINER FOR MEDICAL USE

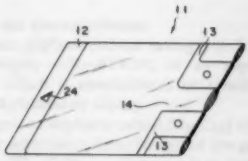
Hideki Nakamura; Toshinobu Ishida, and Takao Yoshida, all of Tokyo, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1982, Ser. No. 384,189

Claims priority, application Japan, Jun. 16, 1981, 56-92534

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—408 **17 Claims**



1. A flexible and collapsible container for medical use which has an improved low temperature characteristic and can withstand high temperatures of high-pressure steam sterilization, comprising:

a container main body made by irradiating a hollow molding having a desired container shape, formed of an ethylene-vinyl acetate copolymer containing 10 to 35% by weight of vinyl acetate, with an electron beam to cross-link the copolymer whereby said cross-linked copolymer has a gel content of 50 to 85% by weight, said container main body being completely sealed at its periphery except for a predetermined portion providing a non-sealed portion;

a functional accessory for achieving the function of the container, having an end portion inserted in the non-sealed portion of the container main body, said functional accessory being made of a polymeric material, and having sufficient heat resistance to withstand high-pressure steam sterilization; and

an interlayer for sealing said container main body at the non-sealed portion thereof to the inserted end portion of said functional accessory, said interlayer being made of a non-cross-linked ethylene-vinyl acetate copolymer containing 15 to 40% by weight of vinyl acetate.

4,465,488

COLLAPSIBLE MULTI-CHAMBER MEDICAL FLUID CONTAINER

Frank M. Richmond, Harvard; Kenneth W. Larson, Libertyville, and Robert A. Miller, Schaumburg, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 23, 1981, Ser. No. 246,479

Int. Cl.³ A61J *1/00*

U.S. Cl. 604—414 **6 Claims**

1. A container for storing medical agents and the like in separate chambers, said container comprising:

flexible plastic walls selectively sealed to define a plurality of adjacent chambers;

a connecting port communicating between a pair of said chambers;

opening means in one of said chambers for permitting agent flow from said chamber and out of said container;

frangible closure means preventing agent flow through said connecting port to maintain said adjacent chambers in separate sealed condition, said frangible closure means being manually openable from the exterior of said container to permit agent flow between said adjacent chambers; and

retention means sealed within said connecting port, frictionally restraining said frangible closure means and preventing said frangible closure means from migrating within

said adjacent chambers after the opening of said frangible closure means.

4,465,489

DECORATING METAL CONTAINERS

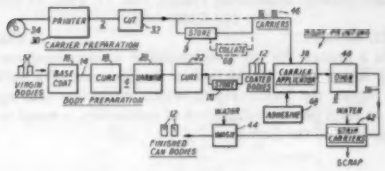
Leonard A. Jenkins, Kirtlington, and Terence A. Turner, Frilford Heath, both of England, assignors to Metal Box PlC, Reading, England

Filed Jul. 14, 1982, Ser. No. 397,981

Claims priority, application United Kingdom, Jul. 14, 1981, 8121726

Int. Cl.³ B41F *17/20;* B44C *1/16;* B41M *1/28*

U.S. Cl. 8—471 11 Claims



1. A method of decorating metal containers, including, in respect of each of a succession of metal containers, the steps

(1) applying a separate, flexible carrier having an area substantially equal to the area to be decorated and printed with indicia in sublimable dyestuff over a coating receptive to such dyestuff on a surface of the container, temporarily holding the carrier on the container by means of an adhesive such as to be removable without damage to the coating;

(2) heating the container whilst the carrier is held to it, at such a temperature and for such a time that the carrier freely shrinks into intimate contact with the coating and a substantial proportion of the dyestuff sublimes so as to transfer the indicia into the coating;

(3) allowing the container to cool; and

(4) stripping the carrier and adhesive.

4,465,490

PROCESS FOR THE CONTINUOUS DYEING OF FABRIC WEBS-FIXING WITH STEAM/AIR MIXTURE

Hans-Ulrich von der Eltz, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 467,027

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206895

Int. Cl.³ D06B *5/20, 21/00;* D06P *1/90*

U.S. Cl. 8—400 3 Claims

1. A process for the continuous dyeing of fabric webs, in which the fabric web is impreganted at a temperature between 20° and 95° C. with an aqueous liquor which contains dissolved dyestuffs or dispersed dyestuffs or mixtures thereof and is squeezed, and the dyestuffs are fixed in a steam/air mixture, which comprises fixing the dyestuff without the impregnated fabric having been dried at an intermediate stage, keeping the dry temperature of the steam/air mixture between 110° and 140° C., adjusting the steam content of the steam/air mixture by controlling the injection of steam, and hence the ratio of steam to air in the steam/air mixture, by means of a psychrometer, to maintain the wet temperature of the moist fabric web between 50° and 95° C., and fixing the dyestuffs for at least 20 seconds.

4,465,491

SOLID DYE PREPARATION OF WATER SOLUBLE DYES WITH ALIPHATIC AMINOCARBOXYLIC ACID

Paolo Balliello, Rheinfelden, Fed. Rep. of Germany; Paul Erzinger, Liestal, and Ernst Tempel, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 339,924, Jan. 18, 1982, abandoned. This application Jul. 20, 1983, Ser. No. 515,444

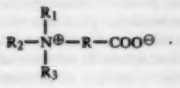
Int. Cl.³ C09B *67/24;* D06P *1/64*

U.S. Cl. 8—524 14 Claims

1. A dyestuff granulate, readily soluble in cold water and containing

(1) 30–90 percent by weight of an anionic dye containing at least one water-solubilizing group,

(2) 1–25 percent by weight of a compound of the formula

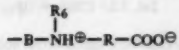


or an alkali salt thereof wherein

R is a bivalent aliphatic radical having 1 to 7 C atoms,

R_1 is hydrogen, —R—COOH, or an aliphatic radical (C_1–C_{12}) which is unsubstituted or substituted by hydroxyl, alkylamino or alkoxy,

R_2 is hydrogen, an aliphatic radical (C_1–C_{12}) which is unsubstituted or substituted by hydroxyl; or the group —$(CH_2)_n$—NH—CO—C_pH_{2p+1} wherein n is an integer from 1 to 3 and p is an integer from 1 to 5, or the group

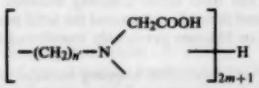


in which

B is a direct bond, or a bivalent aliphatic radical selected from an ether or thioether radical, —CH_2—,

and —$(CH_2)_q$— wherein

q is an integer from 3 to 6, and when R_1 and/or R_6 are hydrogen, q can also be 2, and when R_1 and R_3 are each hydrogen, R_2 can also be



wherein n'is a number from 1 to 3, and

m is an integer from 1 to 10,

R_3 is hydrogen or methyl,

R_6 is hydrogen, —R—COOH, or (C_1–C_{12})-alkyl which is unsubstituted or substituted by hydroxyl, alkylamino or alkoxy, and

(3) 0–50 percent by weight of further additives, which granulate is obtained forming an aqueous mixture of the constituents (1) to (3) and spray drying said mixture.

4,465,492

PROCESS FOR THE PREPARATION OF CONCENTRATED AQUEOUS FORMULATIONS OF SYNTHETIC ANIONIC DISPERSANTS AND THE USE THEREOF

Roland Putzar, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,580

Claims priority, application Switzerland, Aug. 25, 1981, 5470/81

Int. Cl.³ C09B *67/20*

U.S. Cl. 8—589 **14 Claims**

1. A process for the preparation of a concentrated aqueous formulation of a synthetic anionic dispersant selected from the group consisting of sulfated alkylene oxide adducts, sulfated and partially esterified polyhydric alcohols, alkyl sulfonates, sodium dialkyl sulfosuccinates, alkyl benzenesulfonates, condensation products of naphthalenesulfonic acids and formaldehyde, condensation products of ditoly ether, formaldehyde and sulfuric acid, condensation products of chloromethylated diphenylene, naphthalene and sulfuric acid, condensation products of mononuclear aromatic compounds, formaldehyde and naphthalenesulfonic acid, condensation products of mononuclear aromatic compounds, formaldehyde, naphthalenesulfonic acids and sodium sulfite, and condensation products of naphthalene, toluene, formaldehyde and sulfuric acid, which process comprises subjecting the dilute reaction solution of said dispersant to reverse osmosis using a membrane which contains ionic groups and has a pore diameter of 1 to 500 Å.

4,465,493

DESULFURIZATION PROCESS FOR COAL AND OTHER CARBONACEOUS MATERIALS

Amir Attar, 103 Bervie Ct., Cary, N.C. 27511

Filed Dec. 28, 1981, Ser. No. 334,536

Int. Cl.³ C10L *9/02*

U.S. Cl. 44—1 SR **1 Claim**

1. A process for removing sulfur from solid particles of coal, tar sand or bitumen comprising the steps of:

a. transferring solid particles of coal, tar sand or bitumen to a reactor and then conveying the solid particles of coal, tar sand or bitumen into the reactor;

b. conditioning the coal, tar sand, or bitumen prior to entry into the reactor by breaking and pulverizing the solid particles such that their sizes are reduced to three-eighths inch to zero prior to being conveyed into the reactor;

c. transferring into said reactor of the coal, tar sand or bitumen a fluid sulfur trapping material, selected from the group consisting essentially of ethylene, propylene, other olefins, aldehydes and ketones having similar properties of reversible reaction with H_2S;

d. conducting a reaction between the sulfur trapping material and the coal, tar sand or bitumen at a temperature of 370 to 430 degrees Centigrade for a period of one hour or less to produce sulfur compounds;

e. providing a pressure within the reactor of up to 1000 pounds per square inch;

f. moving the fluid sulfur trapping material through said reactor and through and around the solid particles of coal, tar sand or bitumen previously transferred into the reactor;

g. reacting said fluid sulfur trapping material with the resulting sulfur compound produced within said reactor from the solid particles of coal, tar sand or bitumen as the fluid trapping material is moved in and around the solid particles, and chemically binding the sulfur of said resulting sulfur compounds with said moving trapping material to form sulfurized trapping material;

h. separating the resulting sulfurized trapping material from the solid particles of coal, tar sand and bitumen and conveying the resulting sulfurized trapping material from said reactor; and

i. regenerating the sulfur trapping material by decomposing it in a reactor and separating the resulting decomposition products to a sulfur compound, and a regenerated sulfur trapping material.

4,465,494

MICROEMULSION OF WATER IN A LIQUID FUEL

Maurice Bourrel; Alain Sanchez, both of Pau, and Jean-Claude Soula, Orthez, all of France, assignors to Societe Nationale Elf Aquitaine, France

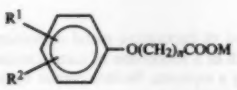
Filed Feb. 10, 1982, Ser. No. 347,589

Claims priority, application France, Feb. 17, 1981, 81 03084

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **25 Claims**

1. In a process for the preparation of a microemulsion by mixing water and a liquid fuel in the presence of a surface active agent, the improvement which comprises said agent being an alkyl phenoxy-alkanoate of ammonium, a metal or an organic base of the formula



in which R^1 is hydrogen, R_2 is a linear or branched C_6 to C_{18} alkyl radical, n is an integer from 1 to 6 and M is Na, K, Li, NH_4 or RNH_3 wherein R is a hydrocarbon or hydroxy-substituted hydrocarbon radical, in an amount of 0.5 to 10 percent, and a cosurfactant which is a C_1 to C_8 alcohol or an amine in an amount of 1 to 27 percent, and the amount of water is 1 to 10% and the balance of said microemulsion is said liquid fuel.

4,465,495

PROCESS FOR MAKING COAL-WATER FUEL SLURRIES AND PRODUCT THEREOF

Robert S. Scheffee, Lorton, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Continuation-in-part of Ser. No. 197,853, Oct. 17, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,523

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **66 Claims**

1. Process for making substantially stable coal-water slurries comprising:

a. Admixing:

(i) ultrafine coal particles having a maximum size of about 10 μMMD in an amount comprising about 10 to 50% by weight of the slurry,

(ii) larger coal particles within the size range of about 20% to 200 μMMD in an amount sufficient to provide a desired total coal concentration in the slurry

(iii) water in an amount sufficient to provide the water carrier component of said slurry, and

(iv) a minor amount of dispersant sufficient to maintain the coal particles in stable dispersion, said dispersant consisting essentially of alkaline earth metal salt of organosulfonate in which the organic moiety is multi-functional, and

b. subjecting the mixture to mixing at a shear rate of at least about 100 sec^{-1}.

4,465,496

REMOVAL OF SOUR WATER FROM COAL GASIFICATION SLAG

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Development Corporation, White Plains, N.Y.

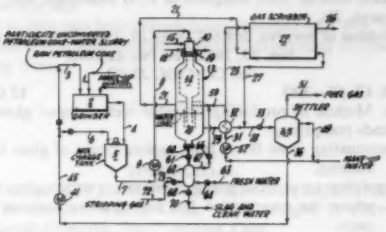
Filed Jan. 10, 1983, Ser. No. 456,948

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **4 Claims**

1. A method for removing solid residue from a pressurized coal gasification reactor comprising a reaction zone and a

water quench zone and wherein ungasified residue from said reaction zone is cooled in said water quench zone and is removed from the water quench zone to the environment via a pressure lock zone in admixture with water from said water quench zone containing noxious gaes, the improvement which comprises eliminating noxious gases from water in said pressure lock zone by displacing said gases from said pressure lock zone into said water quench zone comprising the steps of introducing into the lowermost portion of said pressure lock



zone at least one fluid medium selected from the group consisting of clean water, carbon dioxide, and coal gasification product gases from which said gases have been removed; and discharging displaced fluid comprising said noxious gases from the upper portion of said pressure lock zone into said quench zone, thereafter isolating said pressure lock zone from said quench zone, and discharging solid residue and water substantially free from noxious gases from said pressure lock zone to the environment.

4,465,497

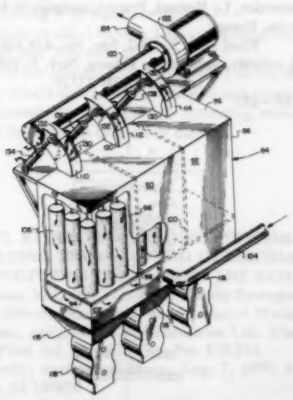
PNEUMATIC CYCLIC EVENT TIMING ACTUATOR AND CONTROL CIRCUIT FOR USE WITH AIR BLAST FILTER CLEANING AND BULK MATERIAL BIN BLASTING SYSTEMS

David F. Howeth, 233 Chuck Wagon Trail, Fort Worth, Tex. 76108

Continuation-in-part of Ser. No. 315,753, Oct. 28, 1981, abandoned, which is a continuation of Ser. No. 146,160, May 2, 1980, abandoned. This application May 17, 1982, Ser. No. 378,864

Int. Cl.³ B01D *46/04*; F15B *15/00*

U.S. Cl. 55—273 **16 Claims**



6. A system for reverse air flow cleaning of a plurality of air filter elements including a plurality of pilot pressure fluid operated valves in communication with a source of pressure air by way of a conduit, a plurality of pilot control valves for providing a pressure fluid signal to respective ones of said fluid operated valves, and means for sequentially actuating said pilot control valves to actuate said fluid operated valves, respectively, comprising:

cylinder means, piston means disposed in said cylinder means and dividing said cylinder means into first and second opposed fluid chambers, said piston means including first and second pressure surfaces of different effective areas and exposed to said first and second chambers, respectively, said piston means being operatively connected to said pilot control valves to actuate a selected one of said pilot control valves in sequence during successive timing strokes of said piston means, first and second passageways in communication with said conduit and with said first and second chambers, respectively, between said source and said fluid operated valves, a flow restricting orifice interposed in said conduit between said first and second passageways and constructed so as to provide a pressure differential between said first and second passageways in response to opening one of said fluid operated valves to effect a retraction stroke of said piston means, said piston means being operable to move through repeated cycles, each cycle including a timing stroke and a retraction stroke for sequentially opening and closing said fluid operated valves in response to pressure fluid acting on said piston means, the duration of said cycles being substantially independent of the fluid pressure of said source.

4,465,498

GAS CLEANING INSTALLATION

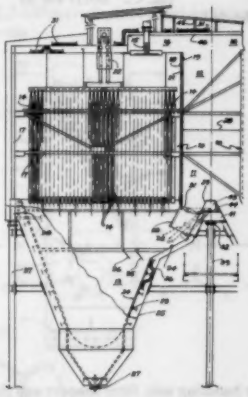
Robert G. Stephenson, Panania, Australia, assignor to James Howden Australia Pty. Limited, Australia

Filed Jul. 6, 1982, Ser. No. 395,623

Claims priority, application Australia, Jul. 3, 1981, PE9579

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 NT **5 Claims**



1. A gas cleaning installation, comprising:

(a) a pair of gas cleaning chambers in spaced apart array, each chamber containing gas filtration means adapted to remove particulate matter entrained in a gas stream passing through the installation, the gas stream to be filtered entering the gas cleaning chamber from an underside thereof and leaving the gas cleaning chamber through an upper end thereof,

(b) a collection chamber beneath each of the gas cleaning chambers and in communication with the underside of the respective gas cleaning chamber, baffle means positioned within each collection chamber such that gas entering that collection chamber is caused initially to flow downwardly

and then to change direction and flow upwardly into the gas filtration means in the gas cleaning chamber, each collection chamber serving to collect particulate matter dropping out of the gas stream as it changes direction and particulate matter dropping out of the respective gas filtration means,

(c) an inlet duct disposed between the pair of gas cleaning chambers and opening into each of the collection chambers, substantially the whole of the floor of the duct between the gas cleaning chambers sloping downwardly into the collection chambers,

(d) an outlet duct disposed between the pair of gas cleaning chambers and above the inlet duct, the outlet duct extending at least partway across the top of each of the gas cleaning chambers and communicating with each gas cleaning chamber through an aperture in the upper end thereof, and

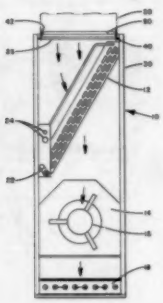
(e) support means comprising a pair of beams lying below the inlet duct, the lower beam being supported on a planar bearing which rests on a pillar and being connected to and in part supporting one of the gas cleaning chambers and its associated collection chamber while the upper beam is supported on the lower beam and is in turn connected to and in part supports the other of the gas cleaning chambers and its associated collection chamber.

4,465,499

ASSEMBLY FOR SECURING FILTER CHANNELS TO SUPPORT STRUCTURE IN A CASING SUCH AS THE HOUSING OF AN AIR HANDLING UNIT AND FOR SELECTIVELY PROVIDING FLANGES FOR SECURING A DUCT TO THE CASING

Thaddeus J. Wawro, Auburn, and Timothy A. Wright, Chittenango, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,674
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—481 **4 Claims**



1. An air handling unit, filter support and flange assembly for both securing a filter across an air flow stream and for selectively providing duct flanges for securing a duct thereto which comprises:

casing means having a plurality of side walls forming a passage for the air flow stream;

a support portion extending inwardly from the side walls;

a pair of filter channels positioned within the casing means on opposite sides of the passage for the air flow stream, each filter channel including a flange portion and a channel portion for the sliding receipt of a filter;

means to secure the filter channels to the support portion in a first position wherein the flange portion does not extend outwardly beyond the support portion and in a second position wherein the flange portion extends beyond the support portion whereby a duct receiving flange is provided; and

at least one duct angle secured to the support portion and extending perpendicular to the filter channels, said at least one duct angle including an extending flange.

4,465,500

METHOD FOR SIZING GLASS FIBERS

Donald L. Motsinger, Forest City, and Daniel G. Brown, Caroleen, both of N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 268,542, May 29, 1981. This application Sep. 23, 1982, Ser. No. 422,042
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.43 **12 Claims**

1. Method of producing flowable wet chopped glass fiber strands comprising:

attenuating glass fibers from molten cones of glass from a bushing,

applying an aqueous sizing composition to the glass fibers, where the composition has one or more cationic lubricants,

one or more water soluble or dispersible nonpolymeric amide compounds selected from the group consisting of urea (carbamide), methyl urea; 1,3-diethyl urea; 1,3-diaminourea (carbohydrazide); methylurea; acetyleneurea; acetylenediurea; melamine; acetamide; propionic amide up to caproamide; and diamides of saturated dicarboxylic acids and sebacamide, and semicarbazide, carbohydrazide, cabamidourea, allophanamide (biuret) and 1-carbomoylsemicarbamide (biurea) in an effective amount to provide moisture control of the wet chopped glass fibers in the range of about 9 to about 20 weight percent of the chopped glass fibers, and

one or more water soluble or dispersible polyols that comprises a predominant amount of the nonaqueous components of the sizing composition, and water in a major amount of the aqueous sizing composition,

gathering the glass fibers into one or more strands,

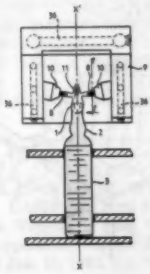
chopping the glass fiber strands to produce wet chopped glass fiber strands having a moisture content in the range of at least 9 to about 20 weight percent of the chopped strand.

4,465,501

APPARATUS FOR ASEPTIC AND ANTIPARTICULATE OPENING OF SEALED GLASS CONTAINERS

Jean Lemonnier, Le Vesinet, France, assignor to Millipore S.A., Molsheim, France

Filed Nov. 2, 1982, Ser. No. 438,666
Claims priority, application France, Nov. 5, 1981, 81 20734
Int. Cl.³ C03B *23/26*
U.S. Cl. 65—285 **6 Claims**



1. A device adapted to aseptically and antiparticulately open a sealed glass ampul containing a liquid or a solid product by

melting the glass at the side of the desired opening while protecting said liquid or solid product from a temperature increase, said device comprising

at least two heat sources for generating an intensive thermal flux in the form of flame tongues of a very high temperature close to the glass melting temperature, said heat sources facing each other and being disposed so that the flame tongues meet to form a substantially vertical disk-like halo tangential to the surface of said side of glass surface; and

said at least two heat sources being mounted on a fork, said fork comprising cooling means for preventing overheating thereof.

4,465,502

HERBICIDAL N-HALOACETYL-2-SUBSTITUTED-6-ACYLANILINES

John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

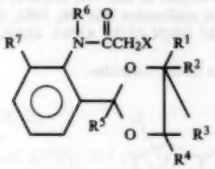
Continuation-in-part of Ser. No. 211,618, Dec. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 172,788, Jul. 28, 1980, Pat. No. 4,348,222, which is a division of Ser. No. 53,877, Jul. 2, 1979, Pat. No. 4,244,730. This application Sep. 7, 1982, Ser. No. 414,763

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ A01N *43/28*

U.S. Cl. 71—76 **14 Claims**

1. A compound having the formula:



wherein

R^1 is alkyl having 1 to 4 carbon atoms;

R^2, R^3 and R^4 are individually hydrogen or alkyl having 1 to 4 carbon atoms;

R^5 is alkyl having 1 to 4 carbon atoms;

R^6 is hydrogen or alkyl having 1 to 4 carbon atoms;

R^7 is methyl; and X is chloro.

11. A method for retarding the growth of Fescue, Bluegrass and Crabgrass which comprises applying to said plants or their growth environment a plant-growth retarding amount of a compound of the formula defined in claim 1.

4,465,503

DIPHENYL ETHER DERIVATIVES, PROCESS FOR PREPARING THE SAME AND HERBICIDAL COMPOSITIONS CONTAINING THE SAME

Hakobu Sekioka; Mitsuaki Takenaka; Yoshio Kawaguchi; Seiji Takamura; Minoru Nishimura, and Masanori Watanabe, all of Ube, Japan, assignors to Ube Industries Ltd., Ube, Japan

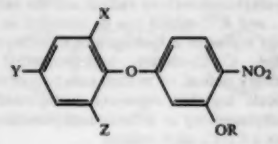
Filed Jul. 30, 1980, Ser. No. 173,732

Claims priority, application Japan, Aug. 7, 1979, 54-99914; Oct. 12, 1979, 54-130870

Int. Cl.³ A01N *43/32*; C07D *317/04*

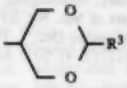
U.S. Cl. 71—88 **14 Claims**

1. A herbicidal composition which comprises (i) a herbicidal carrier and (ii) a herbicidally effective amount of a compound of the formula (I):



(I)

wherein X is a halogen atom; Z is a hydrogen atom or a halogen atom; Y is a halogen atom or a trifluoromethyl group; and R is a group of the formula:



in which R^3 is a hydrogen atom or a methyl group.

4,465,504

HERBICIDALLY ACTIVE NOVEL N-(2,2,2-TRIFLUOROETHYL)-N-ALKYL-AZOLYLOXYACETIC ACID AMIDES AND INTERMEDIATES THEREFOR

Heinz Förster; Volker Mues, both of Wuppertal; Bernd Baasner, Leverkusen; Hermann Hagemann, Leverkusen; Ludwig Eue, Leverkusen, and Robert Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

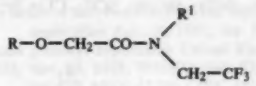
Filed Feb. 19, 1982, Ser. No. 350,520

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109582

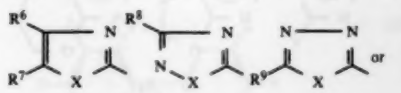
Int. Cl.³ C07D *277/34*; A01N *43/76, 43/78, 43/82*

U.S. Cl. 71—88 **10 Claims**

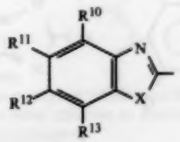
1. An N-(2,2,2-trifluoroethyl)-N-alkyl-azolylacetic acid amide of the formula



in which
R represents



or



X in each case represents oxygen or sulphur, the radicals R^6, R^7, R^8 and R^9, which can be identical or different, individually represent a hydrogen, bromine or chlorine atom, a nitro, cyano, C_1–C_3-alkyl-carbonyl or C_1–C_3-alkoxycarbonyl radical, a phenyl radical which is optionally monosubstituted or disubstituted by fluorine, chlorine or bromine, methyl, methoxy, nitro, amino and/or cyano, or a phenoxy, phenylthio, C_1–C_3-alkylthio, C_1–C_3-alkoxy, C_1–C_3-alkylsulphinyl, C_1–C_3-alkylsulphonyl, C_1–C_4-alkyl, trifluoromethyl, cyano-C_1–C_4-alkyl, C_2–C_4-alkenyl, benzyloxymethyl, C_1–C_3-alkylamino, N-C_1–C_3-alkyl-N-

C_1–C_4-alkyl-carbonylamino, phenoxymethylbenzylthio or C_1–C_3-alkyl-carbonyloxy radical and the radicals R^{10}, R^{11}, R^{12}, and R^{13}, which can be identical or different, individually represent a hydrogen or chlorine atom or a C_1–C_2-alkyl, C_1–C_2-alkoxy, trifluoromethyl or trifluoromethoxy radical, or in each case two of these adjacent radicals together represent methylenedioxy, dichloromethylenedioxy or difluoromethylenedioxy; and

R^1 represents a C_1–C_6-alkyl radical.

4,465,505

HERBICIDAL SULFONAMIDES

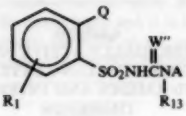
Anthony D. Wolf, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 337,932, Jan. 7, 1982, abandoned. This application Oct. 7, 1982, Ser. No. 428,806

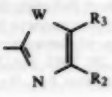
Int. Cl.³ C07D *413/12, 417/12;* A01N *43/54, 43/66*

U.S. Cl. 71—92 **21 Claims**

1. A compound of the formula:



where Q is



W″ is O or S;

W is O;

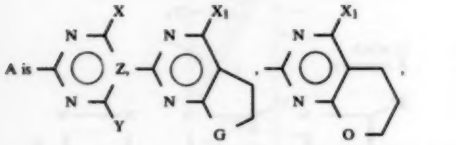
R is H or C_1–C_4 alkyl;

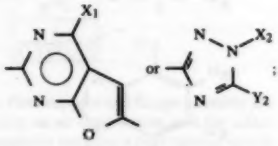
R_1 is H, F, Cl, Br, CH_3, CF_3 or OCH_3;

R_2 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;

R_3 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;

R_{13} is H or CH_3;





X is CH_3, OCH_3 or Cl;

Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$, NH_2, $NHCH_3$, $N(CH_3)_2$, $OCH_2CH_2OCH_3$, OCH_2CF_3, CF_3, SCH_3 or

Z is CH;

X_1 is CH_3, OCH_3 or Cl;

G is O or CH_2;

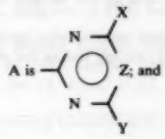
X_2 is C_1–C_3 alkyl or CH_2CF_3;

Y_2 is CH_3O, C_2H_5O, CH_3S or C_2H_5S;

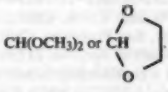
and their agriculturally suitable salts; provided that

(a) when X is Cl, then Z is CH and Y is OCH_3, OC_2H_5, NH_2, $NHCH_3$ or $N(CH_3)_2$; and

(b) when W″ is S, then R_{13} is H;



Y is CH_3, OCH_3, C_2H_5, OC_2H_5, CH_2OCH_3,



4,465,506

HERBICIDAL N-[HETEROCYCLICAMINOCARBONYL]-1H-INDENE AND TETRAHYDRONAPHTHALENE SULFONAMIDES

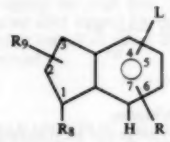
John T. Welch, Albany, N.Y., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 331,891, Dec. 17, 1981, abandoned. This application Nov. 10, 1982, Ser. No. 440,209

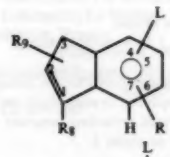
Int. Cl.³ A01N *43/54, 43/64, 43/66, 43/90*

U.S. Cl. 71—92 **26 Claims**

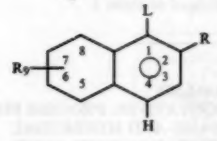
1. Compounds of the formulae:



I



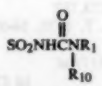
II



III

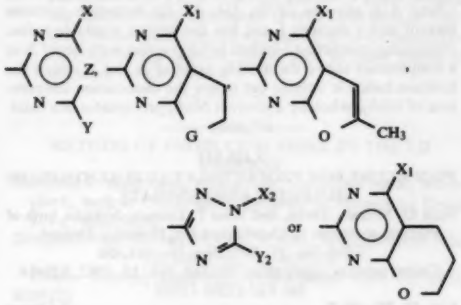
wherein

L is



R is H, Cl, Br, NO_2, QR_2, CO_2R_3, $SO_2NR_5R_6$, $SO_2N(OCH_3)CH_3$, OSO_2R_7 or C_1–C_3 alkyl;

R_2 is C_1–C_3 alkyl, CF_2H, CF_3 or CF_2CF_2H;
R_3 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2CH_2OCH_3$ or CH_2CH_2Cl;
R_5 and R_6 are independently C_1–C_2 alkyl;
R_7 is C_1–C_3 alkyl or CF_3;
R_8 is H, CH_3 or Cl;
R_9 is H or CH_3;
R_{10} is H or CH_3;
Q is O, S or SO_2; R_1 is



X is CH_3, OCH_3 or Cl;
Y is CH_3, C_2H_5, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, SCH_3, $CH(OCH_3)_2$;

or $N(CH_3)_2$;
Z is CH or N;
X_1 is CH_3 or OCH_3;
G is O or CH_2;
X_2 is C_1–C_3 alkyl or CH_2CF_3; and
Y_2 is SCH_3, SC_2H_5, OCH_3 or OC_2H_5.
and their agriculturally suitable salts; provided that
(1) in Formula I, L is not in the 6-position;
(2) in Formula I, when L is in the 4-position and R is in the 6-position, then R is H, Cl, Br, NO_2, CH_3 or OCH_3;
(3) in Formula II, when R_8 is Cl, then R is other than C_1–C_3 alkyl; and
(4) when X is Cl, then Z is CH and Y is NH_2, $NHCH_3$, $N(CH_3)_2$ or OCH_3.

15. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim **1** and at least one of the following: surfactant, solid or liquid diluent.

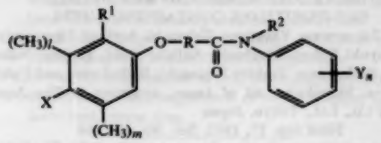
4,465,507

HERBICIDAL ACETANILIDES

Kazuhiko Konno, Ami; Atsushi Goh, Ushiku; Yoshihiro Usui, and Kaoru Ikeda, both of Ami, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,422
Claims priority, application Japan, Apr. 15, 1981, 56-55624
Int. Cl.³ A01N *31/00, 37/18, 37/38, 37/34*
U.S. Cl. 71—98 **10 Claims**

1. A tri- or tetra-substituted phenoxy alkylene- or alkenylene-anilide compound represented by the following formula



(I)

wherein
R represents a linear or branched lower alkylene or alkenylene group,
R^1 represents a methyl group or a halogen atom,
R^2 represents a hydrogen atom, or a lower alkyl, lower alkoxy or hyroxyl group,
X represents a halogen atom,
Y represents a member selected from the class consisting of lower alkyl groups, halogenated lower alkyl groups, lower alkoxy groups, halogen atoms, a nitro group, a cyano group, a hydroxyl group, an amino group, lower alkylamino groups, lower alkanoyloxy groups, lower alkanoylamino group, lower alkylthio groups, lower alkylsulfonyl groups, lower alkanoyl groups, a carboxyl group, lower alkoxycarbonyl groups and lower alkylaminocarbonyl groups,
l and m are each 0 or 1 provided that l and m are not zero at the same time, and
n is 0 or an integer of 1 to 4 and when n is an integer of 2 to 4, a plurality of Y's are identical or different.

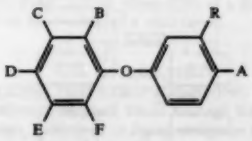
4,465,508

DIPHENYL ETHER HERBICIDES

John E. D. Barton, Reading; David J. Collins, Crowthorne; John M. Cox, Wokingham; David A. Griffin, Bracknell; David R. Parry, Wokingham, and David Cartwright, Woodley, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 168,782, Jul. 14, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,701
Claims priority, application United Kingdom, Jul. 18, 1979, 7925033; Nov. 15, 1979, 7939634; Feb. 12, 1980, 8004604
Int. Cl.³ A01N *41/06;* **C07C** *143/74, 143/78*
U.S. Cl. 71—103 **5 Claims**

1. A compound of formula (II)



(II)

wherein
A is methyl or trifluoromethyl;
B is nitro, chlorine or fluorine;
C is hydrogen;
D is halogen or CF_3;
E is hydrogen;
F is hydrogen, halogen or CF_3; and
R is a group $—CONR^4SO_2R^3$ wherein R^4 is hydrogen or an alkyl group of 1 to 4 carbon atoms and R^3 is an alkenyl or alkynyl radical of 2 to 4 carbon atoms or an alkyl radical of 1 to 4 carbon atoms.

5. A process of inhibiting the growth of unwanted plants, which comprises applying to the plants, or to the locus thereof, a herbicidal amount of at least one compound of the formula (II) as defined in claim **1**.

4,465,509
UREA COMPOUNDS AND HERBICIDAL COMPOSITIONS CONTAINING THEM

Tetsuo Takematsu; Yasutomo Takeuchi, both of Utsunomiya; Michiyuki Kohno, Maebashi; Akihiko Aoki, Tochigi; Nobuo Aoki, Shibukawa; Toshiro Watanuki, Shibukawa, and Koichi Moriya, Shibukawa, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

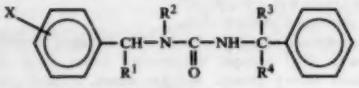
Filed Sep. 27, 1982, Ser. No. 424,244

Claims priority, application Japan, Aug. 30, 1982, 57-150546; Aug. 30, 1982, 57-150547

Int. Cl.³ A01N *9/20*; C07C *127/17*

U.S. Cl. 71—119 **24 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of a hydrogen atom, a halogen atom, a lower alkyl group and a lower alkoxyl group, R^1 is a methyl group or an ethyl group, R^2 is a hydrogen atom, a lower alkyl group or an allyl group, R^3 is a methyl group or an ethyl group and R^4 is an ethyl group.

24. A herbicidal composition which comprises (i) a herbicidally effective amount of a compound according to any of claims 1–23 and (ii) an agronomically-acceptable carrier.

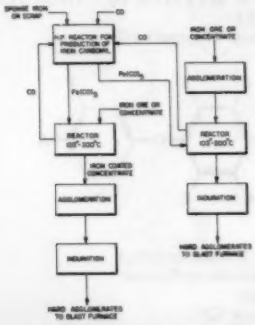
4,465,510
AGGLOMERATION OF IRON ORES AND CONCENTRATES

John A. Meech, and John G. Paterson, both of Kingston, Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Jun. 20, 1983, Ser. No. 505,766

Int. Cl.³ C22B *1/14*

U.S. Cl. 75—3 **1 Claim**



1. A process for producing hard iron ore agglomerates comprising:

(a) agglomerating particulate said iron ore;

(b) treating said agglomerated iron ore with gaseous iron pentacarbonyl at a temperature in the range 103°–300° C. so as to deposit at least 2% carbonyl iron thereon; and

(c) indurating said treated agglomerates at a temperature in the range 500°–800° C. for a sufficient time so as to produce said hard agglomerates.

4,465,511
MAKING NIOBIUM INTERMETALLIC COMPOUNDS

Frank R. Sale, Altrincham, England, and Huseyin Yorucu, JE Alkmaar, Netherlands, assignors to National Research Development Corporation, London, England

Filed Nov. 15, 1983, Ser. No. 551,886

Claims priority, application United Kingdom, Nov. 15, 1982, 8232605; Feb. 14, 1983, 8304014

Int. Cl.³ B22F *9/22*; C22C *27/02*

U.S. Cl. 75—0.5 B **7 Claims**

1. A method of making the intermetallic compound NbA_y, where A is any one of Sn, Ge, Al, Ga including mixtures thereof and y exceeds $\frac{1}{3}$ and has the highest available value, comprising contacting niobium halide vapour with liquid A at a temperature above the melting point of A and at which the niobium halide is volatile but below the dissociation temperature of NbA_y, whereby a product NbA_y precipitates as a solid.

4,465,512
PROCEDURE FOR PRODUCING LEAD BULLION FROM SULPHIDE CONCENTRATE

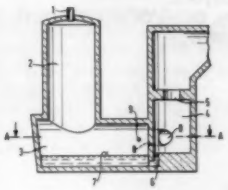
Esko O. Nermes, Turku, and Timo T. Talonen, Nakkila, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Jan. 27, 1983, Ser. No. 461,456

Claims priority, application Finland, Feb. 12, 1982, 820484

Int. Cl.³ C22B *13/00*

U.S. Cl. 75—10 R **5 Claims**



1. Procedure for producing lead bullion in substantially one stage by the suspension smelting procedure from lead sulphide concentrate containing iron, comprising the steps of:

(a) supplying finely dispersed lead sulphide concentrate and oxygen or oxygen-enriched air and lime and silicate flux into an upper part of a suspension smelting zone for forming a suspension and oxidizing the lead sulphide to lead bullion with a sulphur content of 0.1 to 0.5% by weight,

(b) controlling lead content of the slag forming in a settler by controlling the temperature, the $FeO+CaO/SiO_2$ proportion in the slag and the degree of oxidation, jointly or separately, and/or reducing PbO in the slag by adding powdered coal,

(c) regulating oxygen pressure of the gas phase to be in the range where the lead content of the gas is at its minimum,

(d) in an ascending flow zone, subjecting gases containing flue dusts and molten droplets containing lead compounds to cyclone separation in order to return flue dusts and molten lead to said settler so that the quantity of lead bullion obtained from the settler will be a substantial part of the lead quantity contained in the concentrate.

4,465,513
PROCESS TO CONTROL THE SHAPE OF INCLUSIONS IN STEELS

Ronald J. Selines, North Salem; Lawrence J. Hagerty, Ossining, and Donald C. Hilty, Sanborn, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 3, 1983, Ser. No. 538,474

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—53 **8 Claims**

1. A process for the production of steels wherein oxide and sulfide containing inclusions are generally spherical in shape

characterized by adding calcium directly to a steel melt without need for pneumatic injection of the calcium, cored wire or other means of shielding the calcium, comprising:

(A) producing by a refinir.g process employing a basic desulfurizing slag a highly refined steel melt having a sulfur content of not more than 0.005 weight percent, a dissolved oxygen content of not more than 0.005 weight percent and a temperature not exceeding 3000° F.; and

(B) adding calcium directly to said highly refined steel in an amount of from 3 to 25 times the amount of sulfur present, said calcium being introduced in bulk form such as powder, chunks and briquettes without the need for pneumatic injection of the calcium, cored wire or other means of shielding the calcium.

4,465,514

METHOD OF PRODUCING STEEL BY THE LD PROCESS

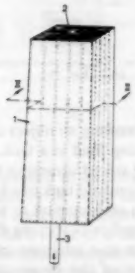
Gerardus P. Bührmann, Velsen-Zuid, and Adam Steen, Heemskerk, both of Netherlands, assignors to Hoogovens Groep B.V., Netherlands

Division of Ser. No. 440,401, Nov. 9, 1982. This application May 18, 1983, Ser. No. 495,719

Claims priority, application Netherlands, Nov. 18, 1981, 8105221

Int. Cl.³ C21C *5/32*

U.S. Cl. 75—60 **3 Claims**



1. A method of producing steel by the LD process, using a metallurgical vessel comprising blowing gas onto the top of a molten metal bath in the vessel for a period of time through an oxygen lance, and during the final portion of said period of blowing of the main oxygen lance, blowing nitrogen gas for a part of the final portion of said period directly into the metal bath through a gas-transmitting wall element so as to reduce the violence of the decarburization reaction in the metal bath, the duration of said final portion being in the range 0 to 2 minutes, and the rate of gas supply through the said wall element during said final portion being in the range 5 to 8 Nm^3/h per ton of metal in the vessel.

4,465,515

PISTON RING FOR INTERNAL COMBUSTION ENGINE

Frank Mundorff, Steyr, Austria, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnsberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,654

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029420

Int. Cl.³ B22F *5/02*

U.S. Cl. 75—243 **10 Claims**

1. Piston ring for an internal combustion engine comprising a mixture of two powdered components which are sintered together under high pressure and temperature,

the first component comprises between 40 and 90% by weight of a hard wear-resistent and heat resistant nickel base or cobalt base alloy armoring metal; and

the second component comprising unrefined or nickel coated graphite which forms the remainder;

and wherein said mixture of said two components is sintered by isostatic hot compression of the powdered mixture to form said piston ring.

4,465,516

ASYMMETRICAL DIESTERS OF ORTHO-PHOSPHORIC ACID USEFUL AS CORROSION INHIBITORS

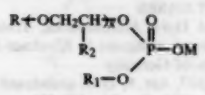
Bernard Danner, Riedisheim, France; Hartmut Mau, Istein, Fed. Rep. of Germany, and Hans Stettler, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 257,379, Apr. 24, 1981, Pat. No. 4,389,259. This application Mar. 10, 1983, Ser. No. 474,047

Int. Cl.³ C23F *11/16*

U.S. Cl. 106—14.12 **14 Claims**

1. A composition for inhibiting the corrosion of metals in the presence of weakly acidic to weakly basic electrolytes comprising a compound of formula I:



I

in which

R is C_{8-18} alkyl,

R_1 is C_{2-4} alkyl,

R_2 is hydrogen or methyl,

x is 1–15,

and M is hydrogen, an alkali metal ion or an equivalent of an alkaline earth metal or zinc ion, in association with a carrier.

4,465,517

DENTURE ADHESIVE COMPOSITION

Susan J. Shields, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 1, 1983, Ser. No. 519,341

Int. Cl.³ C09K *3/00*; C08L *5/00*

U.S. Cl. 106—35 **14 Claims**

1. A denture adhesive composition comprising:

(a) from about 5% to about 50% of a hydroxypropyl guar having an M.S. greater than 0.4;

(b) from about 35% to about 85% of a petrolatum; and

(c) 0% to about 15% of a mineral oil.

4,465,518

PROCESS FOR STRENGTHENING SOFT SOIL

Hajime Miyoshi, Koganei; Etsuo Asanagi, Kashiwa, and Osamu Terashima, Tokyo, all of Japan, assignors to Chiyoda Chemical Engineering & Const. Co., Japan

Filed Jun. 14, 1982, Ser. No. 388,145

Int. Cl.³ C04B *11/00, 7/14, 7/02*

U.S. Cl. 106—89 **10 Claims**

1. A process for improving the strength of a water-saturated soft soil comprising:

providing a finely divided, non-crystalline, calcium-containing iron blast furnace slag;

treating said slag with an aqueous solution containing 20–500 g sulfuric acid per 1 kg of slag to provide an acid-treated slag (A) with conversion of a part of the calcium content of said slag to gypsum;

admixing said acid-treated slag with the soft soil to be treated; and

admixing said acid treated slag and the soft soil with (B) a Portland cement to obtain an unconfined compressive strength of the soil greater than that obtained by using

comparable amounts of cement, calcium sulfate and unacidified slag.

4,465,519

DRY MORTAR MIX WITH ADHESIVE

George E. Hardin, 206 E. 4th St., Bloomington, Ind. 47401

Continuation-in-part of Ser. No. 189,748, Sep. 23, 1980, Pat. No. 4,390,372. This application Jun. 24, 1983, Ser. No. 507,672

Int. Cl.³ C04B 7/351

U.S. Cl. 106—91 4 Claims

1. A dry mix multi-purpose mortar composition comprising: 40% to 60% by weight Portland cement, 25% to 85% by weight finely divided stone, 5 to 60 grams of a surfactant per 100 pounds of dry mix, said finely divided stone having a particle size of between 50 mesh and 200 mesh and selected from the group consisting of marble flour, granite flour, stone flour and fine sand and ¼ lb. to 20 lb. of collagen protein in dry form per 100 lbs. of cement, filler and surfactant.

4,465,520

METHOD AND APPARATUS FOR THE REMOVAL OF OBJECTIONABLE VOLATILE COMPOUNDS FROM HOT GASES

Rolf Jehmlich, Cologne, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz A.G., Fed. Rep. of Germany

Continuation of Ser. No. 251,057, Apr. 6, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 468,691

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016642

Int. Cl.³ C04B 7/36

U.S. Cl. 106—100 8 Claims

1. A method for the removal and consolidation of objectionable volatile compounds from hot gases containing cement raw meal particles of varying sizes and produced during the manufacture of cement which comprises:

cooling said hot gases to the extent that at least a portion of said volatile compounds is condensed into powdery, solid form,

separating coarse cement raw meal particles from said gases in a first separating stage,

separating the powdery solid particles resulting from the condensation together with fine cement raw meal particles from said gases in a second separating stage, said powdery solid particles and said fine cement raw meal particles being of particle sizes less than 200 microns,

mixing the particles separated in said first separating stage with the particles separated in said second separating stage in sufficient amounts to produce a mixture having the following composition:

Chlorides (as Cl)—3 to 20% by weight

SO_2 and SO_3 combined—2 to 20% by weight

K_2O—5 to 30% by weight

Na_2O—2 to 20% by weight

the balance being cement residues including CaO, Al_2O_3, Fe_2O_3 and SiO_2, and

consolidating said mixture into solid shapes of larger area by passing said mixture between a pair of rolls at a pressure up to 6 metric tons per centimeter of roll width to produce shapes having a density of less than 2.7 g/cm³.

4,465,521

DIACETONE FRUCTOSE HYDROLYSIS WITH WATER-INSOLUBLE CATALYSTS

Martin Seidman, Decatur, and Carl W. Niekamp, Forsyth, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 29, 1982, Ser. No. 445,113

Int. Cl.³ C13D 1/00; C13K 11/00

U.S. Cl. 127—36 9 Claims

1. A method for converting diacetone fructose to fructose, said method comprising (a) contacting an aqueous diacetone fructose solution with a catalytically effective amount of water-insoluble perfluorinated acid exchange resin; (b) hydrolyzing a substantial portion of diacetone fructose to fructose and acetone; (c) separating the resulting solution from contact with the acid exchange resin; and (d) recovering the fructose.

4,465,522

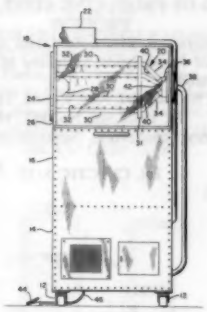
METHOD FOR SURGICALLY CLEANING HANDS AND ARMS

Terry J. Taldo, Grand Prairie, and Kenneth R. Jackson, Arlington, both of Tex., assignors to Delta Manufacturing & Sales, Inc., Arlington, Tex.

Division of Ser. No. 248,510, Mar. 27, 1981, now Defensive Publication No. 4,402,331. This application Jun. 1, 1983, Ser. No. 500,163

Int. Cl.³ B08B 3/02

U.S. Cl. 134—10 21 Claims



1. A method of cleansing an object comprising the steps of:

a. storing a cleansing fluid in a tank,

b. circulating said stored cleansing fluid in a path within a lavage device from said tank to a location for cleansing an object and from said location to said tank,

c. gradually and cyclically varying the pressure of said fluid from a maximum to a minimum pressure to reduce noise during operation of the device and facilitate cleansing, said minimum pressure being greater than zero pressure,

d. discharging said fluid under said gradually and cyclically varying pressure against an object to be cleansed, and

e. providing a fluid flow restrictive means in said circulation path for gradually and cyclically varying the pressure of said cleansing fluid during operation of said lavage device.

4,465,523

METHOD OF QUENCHING METALS

Tadashi Katabuchi, Chiba, Japan, assignor to Idemitsu Kosan Company Limited, Japan

Filed Apr. 11, 1983, Ser. No. 483,489

Claims priority, application Japan, Apr. 26, 1982, 57-68581

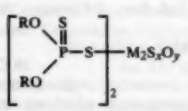
Int. Cl.³ C10M 1/52; C21D 1/44, 1/56

U.S. Cl. 148—18 6 Claims

1. A method of quenching metal which comprises immersing said metal in a quenching oil composition comprising:

(a) a base oil; and

(b) a compound represented by the general formula (I):



(I)

(wherein M is molybdenum (Mo) or tungsten (W), R contains

from 1 to 30 carbon atoms, and is an alkyl group, a cycloalkyl group, an aryl group, or an alkylaryl group, and x and y are each a positive real number provided that $x+y=4$), or a compound represented by the general formula (2):

$$[R_2N-CS-S]_2-M_2O_mS_n \quad (2)$$

(wherein M is Mo or W, R contains from 1 to 30 carbon atoms, and is an alkyl group, a cycloalkyl group, an acryl group, or an alkylaryl group, and m and n are each a positive real number provided that $m+n=4$).

4,465,524

TITANIUM AND ITS ALLOYS

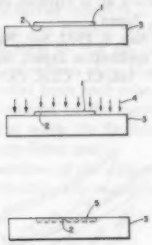
Geoffrey Dearnaley, Abingdon, and Robert E. J. Watkins, Brightwell-cum-Sotwell, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 214,102, Dec. 8, 1980, Pat. No. 4,364,969. This application Sep. 7, 1982, Ser. No. 415,456

Claims priority, application United Kingdom, Dec. 13, 1979, 7943049

Int. Cl.³ C23C *13/02*

U.S. Cl. 148—31.5 **10 Claims**



1. A workpiece of titanium or an alloy of titanium having a surface treated to improve its wear resistance, said surface having been treated by a process comprising the operations of coating the surface with a layer of a metal selected from the group consisting of aluminum, copper, iron, tin, nickel, platinum, zinc and zirconium, and then subjecting the coated surface to bombardment with ions of a species the mass of which is insufficient to cause a harmful degree of sputtering of the surface during implantation, so as to cause the metal to migrate into the workpiece, in which workpiece the metal layer is no longer on the original workpiece surface but has migrated into the workpiece to form a modified surface which has improved wear resistance and reduced coefficient of friction relative to the original surface or any untreated surface areas of the workpiece.

4,465,525

FERRITIC STAINLESS STEEL HAVING EXCELLENT FORMABILITY

Hirofumi Yoshimura, Fukuoka; Mitsuo Ishii; Tadashi Sawatani, both of Hikari, and Shigeru Minamino, Yamaguchi, all of Japan, assignors to Nippon Steel Corporation, Japan

Continuation-in-part of Ser. No. 238,359, Feb. 25, 1981, abandoned. This application Dec. 28, 1982, Ser. No. 453,954

Claims priority, application Japan, Mar. 1, 1980, 55-24638

Int. Cl.³ C22C *38/32, 38/54*

U.S. Cl. 148—37 **5 Claims**

1. A ferritic stainless steel having an excellent formability, which consists essentially of:

0.04% to 0.1% by weight of carbon,

1.0% by weight or less of silicon,

0.75% by weight of less of manganese,

10% to 30% by weight of chromium,

0.5% by weight or less of nickel,

0.0102% to 0.025% by weight of nitrogen,

2 to 30 ppm of boron, and

the balance consisting of iron and unavoidable impurities, the sum of the contents of nitrogen and carbon being 0.0502 % by weight or more.

4,465,526

HIGH-COERCIVE-FORCE PERMANENT MAGNET WITH A LARGE MAXIMUM ENERGY PRODUCT AND A METHOD OF PRODUCING THE SAME

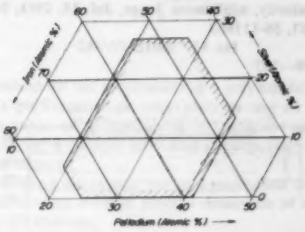
Kiyoshi Watanabe, Sendai, Japan, assignor to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Division of Ser. No. 184,980, Sep. 8, 1980, abandoned. This application Sep. 23, 1982, Ser. No. 422,368

Claims priority, application Japan, Oct. 31, 1979, 54-139896

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—101 **4 Claims**



1. An easily workable high-coercive-force permanent magnet having a large maximum energy product, wherein the permanent magnet consists of 19.5 to 41 atomic % of palladium, 0.1 to 27.5 atomic % of silver, and the remainder of iron with less than 0.5 atomic % of impurities, and the permanent magnet has a crystalline structure with fine grain dispersion of α phase and γ_1 phase in a matrix.

4,465,527

METHOD FOR PRODUCING A GROUP IIB-VIB COMPOUND SEMICONDUCTOR CRYSTAL

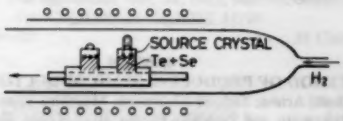
Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi-ken, Japan

Continuation of Ser. No. 272,763, Jun. 11, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,417

Claims priority, application Japan, Jun. 11, 1980, 55-78620

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **19 Claims**



1. A method for effecting solution growth of a Group IIB–VIB compound semiconductor containing at least one of ZnSe, ZnS, CdS and CdSe crystal using Te as a major component of the solvent, said method comprising the steps of:

(1) to said solvent adding from about 0.5 to about 30 at. % of a group VIB element which is a component element of said IIB–VIB compound;

(2) determining a vapor pressure for the growth based on the ratio of said Group VIB element to said solvent;

(3) allowing a source crystal to float on the surface of said solvent, the amount of source crystal being greater than

the solubility for the solvent at the growth temperature of said Group IIB–VIB compound semiconductor;

(4) forming a temperature difference between the solvent and the source crystal so that the temperature of the solvent at the position of the source crystal is higher than the temperature in the lower portion of the solvent, while controlling the temperature in the lower portion of the solvent by adjusting the heat flow through a heat sink; and

(5) forming said compound semiconductor crystal, the crystal growth being preformed at a constant vapor pressure, at a constant temperature and at a constant position.

4,465,528

METHOD OF PRODUCING A WALLED EMITTER SEMICONDUCTOR DEVICE

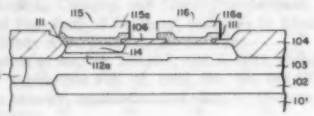
Hiroshi Goto, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 7, 1982, Ser. No. 395,907

Claims priority, application Japan, Jul. 15, 1981, 56-110466; Jul. 17, 1981, 56-111863

Int. Cl.³ H01L *21/265*

U.S. Cl. 148—187 **6 Claims**



1. A method of producing semiconductor devices comprising the steps of:

(a) forming an insulating layer on a semiconductor substrate, the substrate having a first conductivity type;

(b) forming a polycrystalline semiconductor layer on the insulating layer;

(c) forming a mask layer on the polycrystalline semiconductor layer;

(d) introducing a second conductivity type impurity into the semiconductor substrate using the mask layer, formed on the polycrystalline semiconductor layer, as the mask;

(e) removing the mask layer and the polycrystalline semiconductor layer thereunder;

(f) selectively forming an aperture in the insulating layer;

(g) introducing a second conductivity type impurity into the semiconductor substrate through the aperture to a first level; and

(h) selectively introducing a first conductivity type impurity to a second level and into the region where the second conductivity type impurity has been introduced, through the aperture.

4,465,529

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

Hideaki Arima; Tadashi Nishimura; Masahiro Yoneda; Takaaki Fukumoto, and Yoshihiro Hirata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

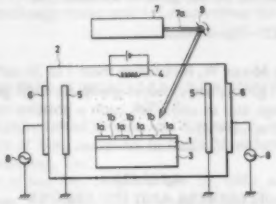
Filed Jun. 4, 1982, Ser. No. 385,137

Claims priority, application Japan, Jun. 5, 1981, 56-87799; Jun. 5, 1981, 56-87800

Int. Cl.³ H01L *21/225*

U.S. Cl. 148—188 **9 Claims**

1. A method for producing a conductive layer of a semiconductor device, comprising; exposing at least a portion of the surface of a semiconductor substrate, introducing a gas atmosphere including an impurity about said substrate and converting said atmosphere to a plasma state, producing a change in the potential of the semiconductor substrate by irradiating said semiconductor in a beam or shower of electrons, and forming an impurity layer on said exposed surface of the semiconductor



substrate, by electrostatically attracting said impurity in the plasma state to said exposed surface.

4,465,530

GAS TURBINE NOZZLE HAVING SUPERIOR THERMAL FATIGUE RESISTANCE

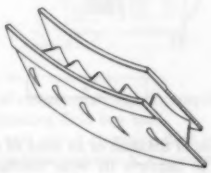
Hiromi Kagohara; Nobuyuki Iizuka; Yutaka Fukui, and Masahiko Sakamoto, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,999

Claims priority, application Japan, Sep. 11, 1981, 56-142225

Int. Cl.³ C22C *19/05*

U.S. Cl. 148—410 **14 Claims**



1. A gas turbine nozzle made of a cast alloy consisting essentially of 0.1 to 1 wt % carbon, 0.1 to 2 wt % silicon, 0.1 to 2 wt % manganese, 20 to 35 wt % chromium, 0.001 to 0.1 wt % boron, 5 to 15 wt % of at least one of tungsten and molybdenum, 16 to 35 wt % cobalt and the balance nickel, said alloy having a heat-treated structure in which eutectic carbides and secondary carbides are dispersed in the matrix; said nozzle having been subjected, subsequently to a solution heat treatment, to a first aging treatment conducted at a temperature higher than the temperature at which said nozzle is used and then to a second aging treatment conducted at a lower temperature near the temperature at which said nozzle is used.

4,465,531

METHOD OF FORMING A CLOSED LOOP OF A FLEXIBLE STRIP

Yusuke Araki, Tachikawa, and Tsuginori Oshima, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,582

Claims priority, application Japan, Nov. 25, 1981, 56-188938

Int. Cl.³ B32B *1/10*

U.S. Cl. 156—64 **7 Claims**

1. A method of forming a closed loop of a flexible strip, comprising

(1) preparing an elongated flexible strip;

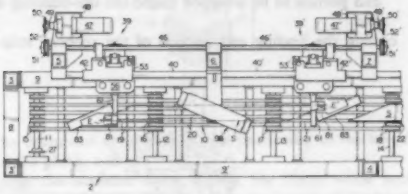
(2) conveying the elongated flexible strip in a predetermined longitudinal direction to a predetermined position on a predetermined conveyance plane;

(3) detecting the locations and geometry of opposite end

portions of the flexible strip while the flexible strip is being conveyed toward said predetermined position thereof;

(4) driving two carrier members to move into positions determined with respect to the end portions of the flexible strip in said predetermined position on said conveyance plane on the basis of the detected locations and geometry of said end portions;

(5) transferring the end portions of the flexible strip to said carrier members, respectively, from said conveyance plane;



(6) further driving the carrier members to move along paths determined to cause the flexible strip to be gradually deformed into loop form so that the end portions of the flexible strip have respective edges slightly spaced apart substantially in parallel from each other;

(7) correcting the positions of the carrier members with respect to each other while the flexible strip is being deformed into said loop form; and

(8) joining the end portions of the strip together along said edges thereof after the flexible strip is deformed into said loop form.

4,465,532

METHOD FOR FORMING AN ISOLATION REGION FOR ELECTRICALLY ISOLATING ELEMENTS

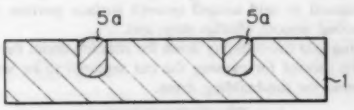
Tetsu Fukano, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 7, 1983, Ser. No. 549,470

Claims priority, application Japan, Nov. 29, 1982, 57-209172; Nov. 29, 1982, 57-209173

Int. Cl.³ C23F *1/02*; C03C *15/00*; B44C *1/22*; H01L *21/306*

U.S. Cl. 156—643 **22 Claims**



1. A method for forming an isolation region for electrically isolating elements in a semiconductor substrate, comprising the steps of:

(a) forming a metal layer on the semiconductor substrate;

(b) forming a resist layer on the metal layer;

(c) patterning the resist layer;

(d) selectively etching the metal and the semiconductor substrate by a reactive ion etching process using a mixture of chlorine-containing gas and oxygen gas to form a groove in the surface portion of the semiconductor substrate located around the periphery of the resist layer; and

(e) forming an insulating layer in the groove.

4,465,533

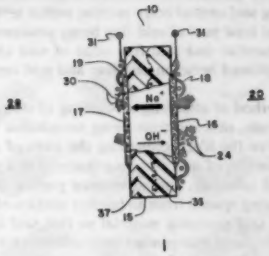
METHOD FOR MAKING POLYMER BONDED ELECTRODES

Michael J. Covitch, Cleveland Heights, Ohio, assignor to ELTECH Systems Limited, Hamilton, Bermuda

Filed Jan. 13, 1983, Ser. No. 457,579

Int. Cl.³ B32B *31/02*; C25B *13/00*

U.S. Cl. 156—83 **12 Claims**



1. A method for the preparation of a polymer bonded electrode of a perfluorocarbon copolymer having an equivalent weight in excess of at least about 900, and not greater than about 1500, and a metallic substance in particulate form comprising the steps of:

finely dividing the copolymer to a particulate state having particles of an average particle dimension of not greater than 100 microns;

admixing the finely divided copolymer with a solvent for the copolymer in both a quantity and at a temperature whereby the copolymer particles are swelled but remain substantially unsolvated in the solvent, and with the particulate metallic substance in a ratio of not less than about a 1:20 ratio of copolymer and metallic substance on a solventless weight basis to form a blended dispersion;

depositing the blended dispersion upon a substrate;

removing the solvent and using at least one of heat and vacuum; and

fusing the resulting polymer bonded electrode using at least one of heat in excess of 100° C. and pressure in excess of 100 pounds per square inch.

4,465,534

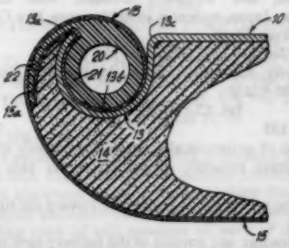
APPARATUS AND METHOD FOR UPHOLSTERING A RIGID CHAIR SHELL

Hyman L. Zelkowitz, West Norriton, Pa., assignor to Knoll International, Inc., New York, N.Y.

Continuation of Ser. No. 394,539, Jul. 2, 1982, abandoned, which is a division of Ser. No. 40,306, May 18, 1979, Pat. No. 4,357,723. This application Nov. 28, 1983, Ser. No. 555,450

Int. Cl.³ B29C *27/22*; B32B *31/20*

U.S. Cl. 156—91 **16 Claims**



1. A method of attaching a flexible covering to a support member and utilizing a retaining element made of a length of

flexible material having a central body portion and a flap integral with said central body portion, said flap being spaced from and extending adjacent to and at least partially circumferentially about an external surface of said central body portion, in which said support member includes a channel member having a free edge, comprising the steps of attaching said covering to said flap on an inside surface of said flap, adjacent to said central body portion, wrapping said covering about said central body portion and an outside surface of said flap, and positioning said central body portion within said channel member with at least part of said flap being positioned outside said channel member and said free edge of said channel member being positioned between said flap and said central body portion.

5. A method of attaching a covering of stretchable material to a substrate, said substrate being constituted of a foam covered shell or the like, comprising the steps of attaching a peripheral portion of said covering material to a peripheral portion of said substrate, with an interior portion of said covering material being spaced from an interior portion of said substrate, stretching said covering material so that said interior portion thereof is brought into contact with said interior portion of said substrate, and adhesively securing together said interior portion of said covering material and said interior portion of said substrate with an adhesive bond therebetween that progressively varies throughout said interior portions proceeding from said interior portions to said peripheral portions with little or no bond at said peripheral portions.

4,465,535

ADHERING CURED POLYMERS OR PREPOLYMERS TO HIGH NATURAL RUBBER CONTENT ELASTOMER

John W. Fieldhouse, Mogadore; Russell W. Koch, Hartville, and James Oziomek, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 12, 1983, Ser. No. 531,317

Int. Cl.³ B29H *5/16;* **B60C** *21/02, 21/06*

U.S. Cl. 156—97 **9 Claims**

1. A process for repairing damaged articles of cured elastomer selected from the group consisting of natural rubber and blends thereof with up to about 30% by weight of synthetic rubber, said process comprising the steps of

(a) cleaning the area to be repaired;

(b) applying to that area a halogen-containing oxidant dissolved in 1,2-dichloroethane;

(c) applying to said oxidant-treated area an amine curable polymer or prepolymer and an amine curing agent in polar solvent;

(d) and curing the amine curable polymer or prepolymer at ambient temperature; whereby the cured polymer or prepolymer is bonded to the elastomer.

4,465,536

METHOD OF AND APPARATUS FOR FEEDING RUBBERY STRIP TO TIRE-BUILDING DRUM

Hisao Makino, and Tsuginori Oshima, both of Higashimurayama, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,247

Claims priority, application Japan, May 1, 1981, 56-67132; May 1, 1981, 56-67133

Int. Cl.³ B29H *17/20*

U.S. Cl. 156—133 **7 Claims**

1. A method of automatically feeding a rubbery strip to a tire-building drum rotatable about the center axis thereof, comprising:

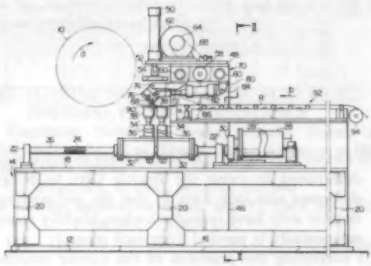
conveying the rubbery strip forwardly toward the tire-building drum;

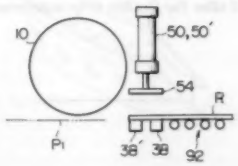
receiving a leading end portion of the rubbery strip on a first smooth surface portion of a first contact strip of two contact strips comprising said first contact strip and a second contact strip having a second smooth surface portion, with one face of the leading end portion directed toward said tire-building drum;

bringing the other face of said leading end portion of said rubbery strip into contact with said tire-building drum substantially throughout the width of the rubbery strip for detachably retaining the leading end portion of the rubbery strip to the first smooth surface portion of said first contact strip;

transferring the leading end portion of the rubbery strip from said first smooth surface portion of said first contact strip to said tire-building drum for permitting the leading end portion to be wrapped round the tire-building drum; and

cutting the leading end portion of the rubbery strip to a





predetermined length from the remainder of the rubbery strip for forming a cut segment having said predetermined length and a trailing end portion received on said second smooth surface portion of said second contact strip of said two contact strips after said segment is cut from the remainder of said rubbery strip, said trailing end portion intervening between an outer peripheral surface of said tire-building drum and said second smooth surface portion of said second smooth contact strip substantially throughout the width of said cut segment for being detachably retained to said second smooth surface portion of said second smooth contact strip; and

driving said tire-building drum for rotation about the center axis thereof for causing the cut segment to be wrapped round the tire-building drum.

4,465,537

METHOD OF MAKING A WOODEN WIND TURBINE BLADE

Clint Coleman, Warren, Vt., assignor to North Wind Power Company, Inc., Moretown, Vt.

Filed May 19, 1982, Ser. No. 379,631

Int. Cl.³ B32B *31/16*

U.S. Cl. 156—154 **5 Claims**

1. A process for manufacturing a rotor blade comprising the steps of

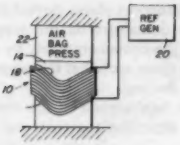
forming a concave mold matching a predetermined air foil surface contour,

wetting a plurality of thin wood layers with adhesive,

stacking a predetermined number of wetted layers of wood on the concave mold,

applying uniform pressure to the top layer while bonding the wooden layers together into an elongated laminated blank having convex and concave sides,

bringing a rotating abrasive drum having a drum axis into contact with the concave surface of the blade blank with



the drum axis approximately perpendicular to the length of the blank, and

forcing the abrasive drum against the blank while both advancing the drum axially along the length of the blank and also gradually varying the tilt angle of the drum axis relative to horizontal according to a predetermined twist schedule to form a flat-bottomed air foil.

4,465,538

METHOD OF MAKING A PRINTED CIRCUIT BOARD

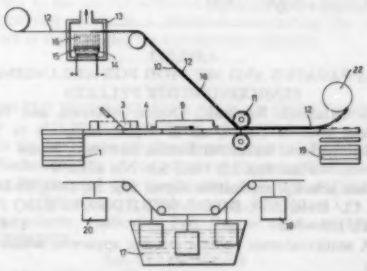
Helmuth Schmoock, Buchener Weg 121, D-2058 Lauenburg-/Elbe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 289,385, Aug. 3, 1981, abandoned. This application Feb. 18, 1982, Ser. No. 350,107

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029521

Int. Cl.³ B05D *5/12*; H05K *3/18*

U.S. Cl. 156—233 **25 Claims**



1. A method of making a circuit board having a circuit of a predetermined pattern, said method comprising the steps of:

(a) applying an adhesive layer to a circuit board substrate in said predetermined pattern;

(b) adhering a base layer to said adhesive layer; and

(c) forming said circuit subsequent to the adhering step by coating said base layer with an electrically conductive layer.

4,465,539

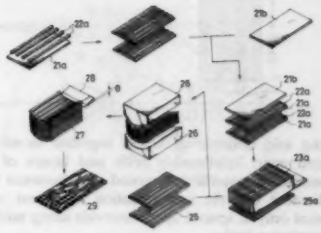
ARTIFICIAL VENEER AND METHOD OF MANUFACTURING THE SAME

Yasuhiro Saihara, Kadoma; Takashi Kishimoto; Kiyouji Masamoto, both of Hirakata; Shozo Hirao, Suita; Takeru Murakami, Yawata, and Yoshihiko Yamashita, Okazaki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 16, 1982, Ser. No. 418,747

Int. Cl.³ B32B *3/14, 21/14, 31/18*; B27D *1/10*

U.S. Cl. 156—250 **7 Claims**



1. A method of manufacturing artificial veneers comprising the steps of

preparing material veneers cut out of at least a raw log,

depositing wood meal onto respective said material veneers with an adhesive interposed,

preparing a primary artificial flitch by stacking, pressing and collecting a plurality of said material veneers having said wood meal adhered such that said primary flitch comprises alternating layers of material veneers and wood meal,

slicing said primary artificial flitch in its quartersawn grain direction by a cutting edge oriented generally perpendicularly to the planes of said layers to obtain particle-containing veneers,

preparing a secondary artificial flitch by stacking, pressing and collecting with an adhesive interposed a combination of a plurality of said particle-containing veneers with additional ones of said material veneers such that said additional material veneers are disposed in alternating relationship relative to said particle-containing veneers and are oriented generally perpendicularly to the planes of said layers of said particle-containing veneers, said additional material veneers being provided in said secondary flitch at a ratio of at least 1:1 relative to said particle-containing veneers, and

slicing said secondary artificial flitch in its flatsawn grain direction by a cutting edge oriented generally perpendicularly to the planes of said layers and traveling through said secondary flitch in a direction oriented at an angle relative to the planes of said additional material veneers.

4,465,540

METHOD OF MANUFACTURE OF LAMINATE RADIATION COLLIMATOR

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Division of Ser. No. 35,733, May 3, 1979, Pat. No. 4,288,697. This application Apr. 6, 1981, Ser. No. 250,949

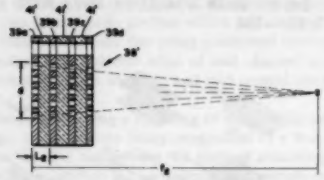
Int. Cl.³ B32B *31/16*

U.S. Cl. 156—252 **8 Claims**

1. In a method of manufacturing a laminate radiation collimator which has a plurality of parallel collimating layers of radiation absorbent material each of which has a plurality of spaced apart radiation transmissive passages and wherein corresponding ones of said passages of each of the collimating layers are aligned to define a plurality of spaced apart radiation transmissive paths through the collimator, the steps comprising:

forming said plurality of collimating layers including forming said radiation transmissive passages therein,

assembling said collimator by arranging said collimating layers in parallel, spaced apart relationship with said corresponding radiation transmissive passages of said collimating layers in alignment and by interposing parallel layers of radiation transmissive material between said collimating layers in contact therewith, and



securing said collimating layers together in said parallel spaced apart relationship with said layers of radiation transmissive material interposed therebetween to form a collimator wherein said radiation absorbent material is present only at spaced apart intervals along said radiation transmissive paths.

4,465,541

GROUPING SINGLE DOSE CONTAINERS

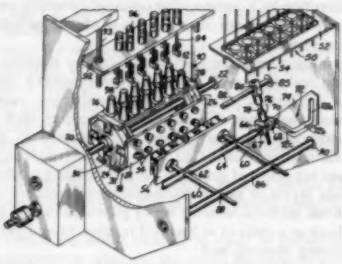
Gérard J. Charpentier, Landes, and Francis Cazas, Val-de-Marne, both of France, assignors to Etablissements Cazas, Seine-Saint-Denis and Monoplast, Landes, both of, France

Filed Jan. 18, 1982, Ser. No. 340,029

Claims priority, application France, Jan. 19, 1981, 81 00878

Int. Cl.³ B29C *27/06, 27/08, 27/10*

U.S. Cl. 156—304.1 **11 Claims**



1. In apparatus for grouping containers each provided with a polygonal collar by attaching together adjacent sides of different containers, the improvement comprising

a drum designed to turn about an axis and carrying several similar plates parallel to the axis and substantially perpendicular to a radial plane through the drum, the plates being regularly spaced about the drum in such a way that each two successive plates are separated by a given angle,

a plurality of devices located on each plate for releasably engaging and holding each of said containers solely by an internal surface of said container,

a plurality of work stations spaced about the drum,

a drive device for driving the drum in rotation by steps equal to the given angle in such a fashion that the plates of the drum are always opposite located adjacent one of the work stations,

a first transfer device located at a first work station and designed to transfer separate containers from a first stock to holding devices on the plate which is located at the first work station,

a grouping device located at a second work station and designed to attach together certain adjacent sides of the collars at least of certain containers, and a second transfer device located at a third work station and designed to transfer the containers after grouping to a second stock.

11. In a process for grouping containers, each container being terminated by a collar having an exterior polygonal contour, the process being of a type which comprises assembling adjacent sides of the collars edge to edge of two different containers, the improvement which comprises

transferring several individual containers from a stock to one of several support plates carried on a rotary drum,

holding the containers on the support plate with means engaging the containers solely by their internal surfaces,

rotating the drum such that the support plate lies opposite a grouping device,

grouping at least certain of the containers carried by the plate by attaching together said adjacent sides of the collars,

rotating the drum such that the plate carrying the grouped containers moves to a discharge position, and

discharging the grouped containers to a second stock.

4,465,542

ADHESIVE COMPOSITION

Toshikazu Furihata, Ichihara, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 17, 1983, Ser. No. 467,207

Claims priority, application Japan, Feb. 19, 1982, 57-26548; May 21, 1982, 57-86782; Nov. 15, 1982, 57-200046

Int. Cl.³ C09J *3/16, 5/02*

U.S. Cl. 156—330 **6 Claims**

1. An adhesive composition comprising:

(a) a nitrogen atom-free epoxy compound, (b) a poly-N-glycidyl epoxy resin, and (c) a nitrile rubber having a carboxyl group, the compounding ratio by weight of the components (a), (b), and (c) in the composition being as follows:

$0.05 \leqq (b)/(a) \leqq 19$

$0.05 \leqq [(a)+(b)]/(c) \leqq 1.75$.

5. A method for forming FPC by applying an adhesive composition to a heat stable plastic film, laminating the film to a metallic foil, and then contact bonding the laminate, said adhesion composition containing (a) a nitrogen atom-free epoxy compund, (b) a poly N-glycidyl epoxy resin, and (c) a nitrile rubber having a carboxyl group, the compounding ratio by weight of the components (a), (b), and (c) in the composition being as follows:

$0.05 \leqq (b)/(a) \leqq 19$

$0.05 \leqq [(a)+(b)]/(c) \leqq 1.75$.

4,465,543

APPARATUS AND METHOD FOR ARRANGING SEMICONDUCTOR PELLETS

Tetsuo Sadamasa, Kawasaki; Osamu Ichikawa, and Tatsuro Beppu, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1982, Ser. No. 421,099

Claims priority, application Japan, Sep. 22, 1981, 56-148844

Int. Cl.³ B44C *1/14;* **B65C** *9/00;* **B21D** *39/03;* **B23Q** *3/18*

U.S. Cl. 156—542 **17 Claims**

1. A semiconductor pellet-arranging apparatus which comprises:

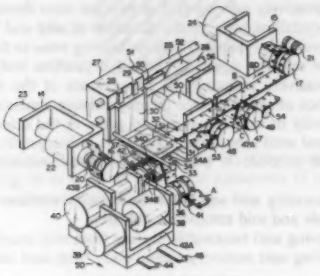
first pellet-supporting means provided with an apical plane and a first inclined plane contiguous to said apical plane;

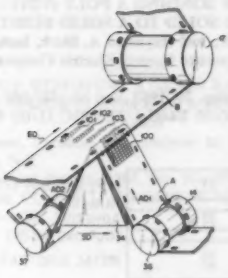
first drive means for stepwise carrying a first adhesive tape on which there is mounted at least one pellet matrix including a plurality of rows of pellets and a plurality of columns of pellets wherein the pellets constituting each column contact each other along the first inclined plane with the pellet matrixbearing plane of said first tape kept upward in such a manner that the pellet rows of the matrix

are successively set on the apical plane of the first pellet-supporting means;

second drive means for carrying a second adhesive tape to a position above the apical plane of the first pellet-supporting means in a direction intersecting the pellet columns at right angles with the adhesive plane of said second adhesive tape made to face the first adhesive tape;

pressing means which, when one row of the pellet matrix mounted on the first adhesive tape is brought to set on the





apical plane of the first pellet-supporting means, presses the second adhesive tape against that row of the pellet matrix which is set on the apical plane of the first pellet-supporting means thereby to transpose said pellet row to the apical plane mounted on the second adhesive tape; and

third drive means, which, when each pellet row is transposed to the second adhesive tape, shifts the first pellet-supporting means in a direction intersecting the pellet rows at right angles for a prescribed distance.

4,465,544

APPARATUS FOR PASTING A WEB AT RIGHT ANGLES TO ITS DIRECTION OF MOTION

Rudolph Fischer, Ludwigshafen-Oggersheim, and Rudolf Stäb, Wachenheim, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

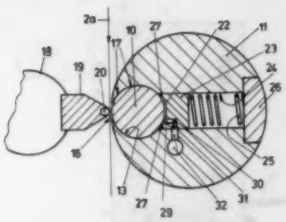
Filed Mar. 7, 1983, Ser. No. 472,727

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1982, 3207620?2

Int. Cl.³ B05C *1/08*

U.S. Cl. 156—548 **17 Claims**

1. In an apparatus for placing strips of adhesive compound on a web moving in the direction of its length, the strips being generally at a right angle to the said length direction of the web, comprising a pasting cylinder running across said length direction generally at a right angle thereto, means for turning said cylinder at a speed related to the speed of said web, and a support part, said support part and said pasting cylinder being on opposite sides of said web, the invention residing in that said pasting cylinder is made up of a paster roll and a pasting cylinder body with said roll thereon, the roll and the cylinder having axes that are parallel to each other, said roll being supported on said body for turning motion in relation thereto and having an outer face with at least one paste well let into it so that said well is open and in the form of a break in the said outer face, said well having an outer limiting edge in keeping with the desired form of said strips, stripper means for keeping said outer face clear of said compound, said outer face being uncovered at least at a position opposite to said web support part, driving and timing means for turning said pasting cylinder



body and said paster roll in relation to each other so that the axis of one thereof is moved about the other and so that the roll and the body is each turned about its axis with the timing thereof bearing a relation to the speed of the said web and being such that the sum of the surface speeds of the roll and of the said body as measured in the direction of motion of said web is equal to the speed of the web, said support part comprising a shaft, means for turning said shaft in timed relation to said web and to said paster roll, and a rail fixed to said shaft and sticking out proud therefrom in a radial direction in relation thereto, said rail being parallel to said pasting cylinder.

4,465,545

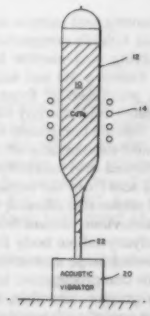
METHOD OF GROWING SINGLE CRYSTAL CADMIUM TELLURIDE

Robert S. Feigelson, Saratoga, and Alexander Borshchevsky, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Jul. 30, 1982, Ser. No. 403,554

Int. Cl.³ C30B *7/06*

U.S. Cl. 156—616 R **5 Claims**



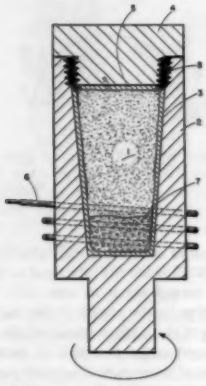
1. A method of enhancing the crystalline structure of cadmium telluride grown by a Bridgman process comprising the step of applying low amplitude vibrations at a frequency of less than 1000 hertz to the cadmium telluride as it is grown with vibratory displacement of the cadmium telluride being less than one-half of a millimeter.

4,465,546

METHOD OF GROWING POLYCRYSTALLINE AND MONOCRYSTALLINE BODIES OF VOLATILE 2,6 AND 3,5 COMPOUNDS IN GRAPHITE CRUCIBLES BY SELF-SEALING AND SELF-RELEASING TECHNIQUES

Brian J. Fitzpatrick, and Thomas F. McGee, III, both of Ossining, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,929
Int. Cl.³ C30B *15/10*
U.S. Cl. 156—616 A **14 Claims**



1. A method of forming a large polycrystalline body of a volatile 2,6 or a 3,5 compound which method comprises:

(a) substantially filling a graphite crucible, at least the internal surface of which is coated with pyrolytic graphite, with a charge of at least one piece of said volatile compound;

(b) closing said filled crucible with a removable graphite closure at least the surface of which opposing the charge is coated with pyrolytic graphite;

(c) applying a narrow heating zone of a temperature very slightly above the melting point of said volatile compound to the end of said filled crucible remote from said removable closure thereby forming a narrow molten zone of said volatile compound at said end of said crucible and causing a minor portion of said volatile compound to volatilize and condense on the adjacent surfaces of said crucible and said removable closure thereby forming a temporary seal therebetween;

(d) progressively moving said narrow molten zone through said charge of said volatile compound in the direction of said seal by applying said narrow heating zone to the interface of said molten zone and said charge of volatile compound while progressively freezing the opposite interface of said molten zone thereby causing a polycrystalline body of said volatile compound to grow in the direction of said seal until substantially all of the charge in said crucible is transformed into said polycrystalline body;

(e) evaporating said seal from the adjacent surfaces of said crucible and said removable closure;

(f) removing said removable closure from said crucible and removing said polycrystalline body from said crucible.

8. A method of growing large monocrystal bodies of 2,6 or 3,5 volatile compounds comprising:

(a) inserting into a graphite crucible, at least the interior surface of which is coated with pyrolytic graphite, a single polycrystalline body of said compound of a size and shape to substantially fill said crucible

(b) closing said crucible with a removable graphite closure adapted for said crucible, at least the surface of which opposing the polycrystalline body is coated with pyrolytic graphite;

(c) applying a narrow heating zone of a temperature range of 5°–100° C. below the melting point of said compound to the end of said polycrystalline body remote from said removable closure, thereby forming a narrow hot zone in a temperature range of about 5°–100° C. below the melting point of said compound in said end of said body, the temperature of said hot zone being sufficiently high to cause a small portion of said polycrystalline body to volatilize and condense on the adjacent surfaces of said crucible and said removable closure thereby forming a temporary seal therebetween;

(d) progressively moving said narrow hot zone through said polycrystalline body in the direction of said seal by progressively applying said narrow heating zone to the interface of said hot zone and the polycrystalline body while progressively reducing the temperature of the opposite interface of said hot zone thereby causing a monocrystalline body of said compound to grow in the direction of said seal until substantially all of the polycrystalline body in said crucible is transformed into a monocrystalline body;

(e) evaporating said seal from the adjacent surfaces of said crucible and said removable closure;

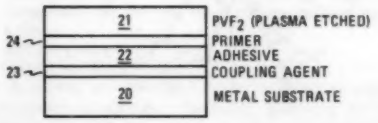
(f) removing said removable closure from said crucible and removing said monocrystalline body from said crucible.

4,465,547

METHOD OF BONDING A POLY (VINYLIDENE FLUORIDE) SOLID TO A SOLID SUBSTRATE

Robert E. Belke, Jr., and Raymond A. Shirk, both of N. Syracuse, N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Sep. 29, 1983, Ser. No. 537,059
Int. Cl.³ B29C *17/08*; B44C *1/22*; C03C *15/00*; C23F *1/00*
U.S. Cl. 156—629 **16 Claims**



1. The method of preparing a poly(vinylidene fluoride) (PVF_2) solid for bonding to a solid substrate comprising the steps of:

A. providing a PVF_2 solid containing crystallites,

(1) abrading the surface of the PVF_2 solid to provide an irregular bonding surface,

(2) rinsing the surface of the PVF_2 solid to remove surface contaminants,

(3) plasma etching the surface of the PVF_2 solid to create a temporary high energy bonding surface by activated free radical and ionic species of oxygen, while keeping the PVF_2 solid at a temperature below the melting point of its crystallites for dimensional stability, and

(4) applying a primer to the surface of the PVF_2 solid capable of wetting the activated high energy surface of the PVF_2, before the temporary high energy bonding surface has deteriorated.

4,465,548

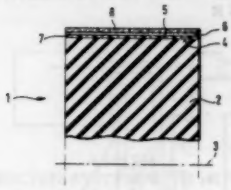
METHOI FOR BONDING GRINDING MATERIAL ONTO A GRINDING DISK AND A GRINDING DISK SO MADE

Gerd Braasch, Sassenberg 31, 4475 Sögel, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,422
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148499
Int. Cl.³ B24D *11/00*; B23F *21/03*; B29C *17/08*; C03C *15/00*
U.S. Cl. 156—630 **12 Claims**

1. A method for adhering a grinding belt onto a grinding element, comprising the steps of:

applying a separating layer which is made from an unstable material with respect to a solvent, on at least one of the two engaging faces of the endless grinding belt and the grinding element; and



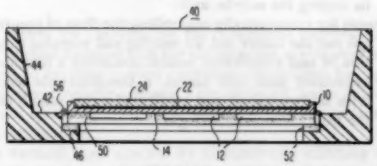
subsequently applying an adhesive layer between said engaging faces to effect releasable adherence of said grinding belt to said grinding element.

4,465,549

METHOD OF REMOVING A GLASS BACKING PLATE FROM ONE MAJOR SURFACE OF A SEMICONDUCTOR WAFER

Ira G. Ritzman, Paradise, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1984, Ser. No. 574,169
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—630 **13 Claims**



1. A method of removing a glass backing plate from one major surface of a semiconductor wafer, said glass plate being glued to said one major surface, said wafer having imaging elements formed on the opposed major surface thereof, said wafer being disposed in an etch impervious holder having a wafer support surface, the method comprising the steps of

a. providing a substantially etch impervious coating on the opposed major surface of said wafer including said imaging elements,

b. providing a substantially etch impervious layer on said wafer support surface of said holder,

c. providing a substantially etch impervious, leak-tight seal between said wafer and said holder,

d. etching said glass plate in a suitable etching solution until said glass plate and the glue are dissolved from the one major surface,

e. removing said substantially etch impervious coating on the opposed major surface of said wafer and the substantially etch impervious seal between said wafer and said holder, and

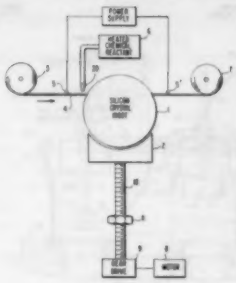
f. cleaning the one major surface of said wafer to remove all residual traces of glue therefrom.

4,465,550

METHOD AND APPARATUS FOR SLICING SEMICONDUCTOR INGOTS

Richard L. Lane, Penfield, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 388,876, Jun. 16, 1982, abandoned. This application Jan. 10, 1984, Ser. No. 568,936
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—635 **9 Claims**



1. A method of slicing a crystalline ingot to form thin wafers therefrom comprising the steps of:

moving a flexible metallic wire in relation to a kerf formed in said ingot during the slicing operation,

depositing on said metallic wire a molten salt or mixture of salts capable of chemically reacting with the crystalline material to dissolve said material,

and

maintaining the temperature of the molten salt at least outside of the kerf below that at which molten salt reacts with the crystalline material of which the ingot is formed,

heating said metallic wire to a sufficiently high temperature to ensure that said molten salt is chemically reactive in said kerf with said crystalline material,

whereby said molten salt is conveyed to the kerf of the ingot by said flexible member and effects cutting of said ingot.

4,465,551

GRADED MICROSTRUCTURED LAYERS FORMED BY VACUUM ETCHING

Christopher M. Horwitz, Room 13-3061, M.I.T., 77 Massachusetts Ave., Cambridge, Mass. 02139

Continuation of Ser. No. 147,487, May 7, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,313
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **9 Claims**

1. A method of forming graded microstructures upon a substrate, the method comprising:

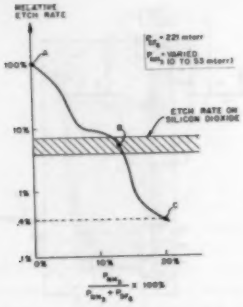
(a) coating the substrate with a globular material, the material being chosen for its ability to self-agglomerate upon the substrate to form a non-uniform coating of varying thickness;

(b) vacuum etching the coated substrate in the presence of at least one reactive gas, whereby portions of the substrate are etched to different depths depending upon the thickness of the overlying globular material, thus producing a graded microstructure upon the substrate.

4,465,552
METHOD OF SELECTIVELY ETCHING SILICON DIOXIDE WITH SF_6/NITRIDING COMPONENT GAS

Stephen M. Bobbio, Hamburg; Marie C. Flanigan, Lockport, and Kenneth M. Thrun, Cheektowaga, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 11, 1983, Ser. No. 522,437
Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 11 Claims

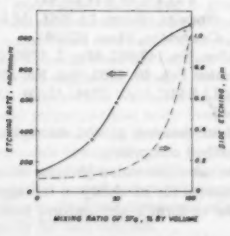


1. A method of selectively etching silicon dioxide preferentially over silicon or polysilicon in an article containing a layer of silicon dioxide on an underlayer of silicon or polysilicon which comprises exposing said article to a low pressure plasma gas mixture discharge wherein the plasma comprises SF_6 and a nitriding component in the gaseous phase and continuing said exposure until the silicon dioxide layer is penetrated.

4,465,553
METHOD FOR DRY ETCHING OF A SUBSTRATE SURFACE

Isamu Hijikata, Sagamihara; Akira Uehara, Yokohama, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Denshi Kagaku Co., Ltd., Kawasaki, Japan

Filed Nov. 15, 1983, Ser. No. 551,898
Claims priority, application Japan, Nov. 20, 1982, 57-203857
Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*
U.S. Cl. 156—643 2 Claims

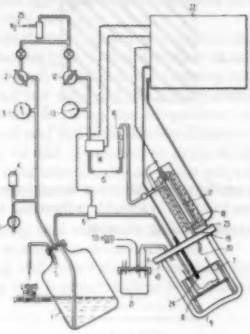


1. A method for pattern-wise etching of a surface layer of a substrate by a dry process which comprises exposing the surface layer on the substrate to an atmosphere of plasma generated in a gaseous mixture of pentafluorochloroethane and sulfur hexafluoride.

4,465,554
HOT JET EVAPORATOR

John R. Glass, Mickleton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,416
Int. Cl.³ B01D *1/14, 1/30;* B01L *11/02*
U.S. Cl. 159—16 R 12 Claims



1. An evaporator for the evaporation of a liquid fraction, comprising:

a container wherein said fraction may be evaporated,

a nozzle connected to a source of non-reactive gas and spatially situated so as to direct a stream of non-reactive gas exiting therefrom onto the liquid fraction within the container,

an insulated flask and gasket surrounding and sealing said container and nozzle such that the container and nozzle are protected from contamination and fraction vapors do not escape,

a heater situated between the non-reactive gas source and nozzle and capable of heating the non-reactive gas prior to its exiting the nozzle, and

means for automatically controlling the flow of non-reactive gas and the heater and for starting and stopping the operation of said evaporator, which comprises a thermocouple associated with said heater, a thermocouple associated with said container and a solenoid valve which controls the flow of non-reactive gas.

4,465,555
WATER-SOLUBLE POLYMERS OF DI-C_1–C_3-ALKYLAMINONEOPENTYL (METH)ACRYLATES, AND THEIR USE AS RETENTION AGENTS, DRAINAGE AGENTS AND FLOCCULANTS IN PAPERMAKING

Friedrich Linhart, Heidelberg; Juergen Hartmann; Dietmar Jung, both of Ludwigshafen; Heinrich Hartmann, and Herbert Spoor, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,316
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124011
Int. Cl.³ D21H *3/38*
U.S. Cl. 162—168.2 5 Claims

1. In a process for the manufacture of paper wherein the improvement comprises adding to the paper making stock as a retention agent, a drainage agent and a flocculant, a water-soluble copolymer having a K value of from about 150 to about 300, which copolymer is prepared by polymerizing

a. not less than 5% by weight of a neutralized or quaternized di-C_1–C_3-alkylaminoneopentyl acrylate or methacrylate, with

b. about 5% to about 95% by weight of a water-soluble

copolymerizable ethylenically unsaturated monomer or monomers selected from

i. 0 to about 27% by weight of di-C_1–C_3-alkylamino-C_2–C_4-alkylacrylate or methacrylate and

ii. about 95% to about 5% by weight of acrylamide or methacrylamide.

4,465,556

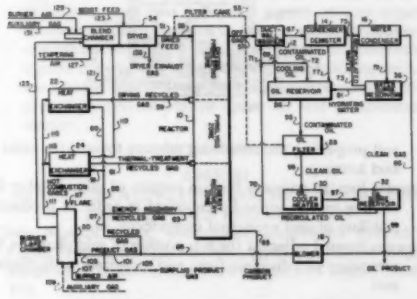
PYROLYSIS SYSTEM WITH HOT GAS RECIRCULATION

Mack D. Bowen, Smyrna, and Kenneth R. Purdy, Decatur, both of Ga., assignors to American Carbons, Inc., Marietta, Ga.

Division of Ser. No. 283,033, Jul. 16, 1981, Pat. No. 4,419,185. This application Jul. 28, 1982, Ser. No. 402,641

Int. Cl.³ C10B *1/04, 47/18, 53/02*

U.S. Cl. 202—99 **13 Claims**



1. A system for carrying out the continuous pyrolysis of a feed of organic material that self-decomposes at elevated temperatures to produce a solid carbonaceous residue having a predetermined volatile content, a pyrolytic oil, and a gaseous mixture of condensible and noncondensible fractions, comprising in combination:

(a) a vertical shaft reactor for continuously effecting the pyrolysis of such feed as a descending packed bed, said reactor having inlets at sequentially downwardly spaced locations for feed, drying/preheating gas, thermal treatment gas and thermal energy recovery gas, and having outlets adjacent the top and bottom thereof for offgases and solid residue product, respectively;

(b) means for treating the offgases from said reactor to remove therefrom entrained solid particulates and condensible fractions, to provide a cleansed gas;

(c) means for recycling the cleansed gas to each of said drying/preheating gas, treatment gas and recovery gas inlets of said reactor;

(d) means, independently associated with each of said inlets for drying/preheating gas and for treatment gas, for heating the gas prior to introduction into said reactor therethrough, said heating means being capable of producing a temperature in the gas introduced through said treatment gas inlet that is substantially above the temperature of the gas introduced through said drying/preheating gas inlet; and

(e) means for adjusting the mass flow rate of the gas introduced through said drying/preheating gas inlet so as to maintain a constant temperature in the offgas stream.

4,465,557

GAS TRANSFERRING APPARATUS IN COKE OVEN

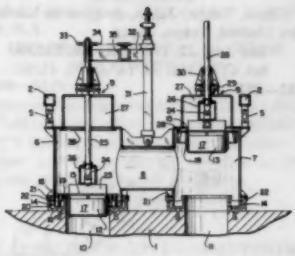
Manfred Blase, Essen; Klaus Dahl, Gelsenkirchen; Manfred Galow, Essen, all of Fed. Rep. of Germany, and Johann Zendron, Linz, Austria, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany and Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed May 3, 1982, Ser. No. 374,263

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118941; Feb. 12, 1982, 3204991

Int. Cl.³ C10B *25/24, 27/04, 31/04, 43/04*

U.S. Cl. 202;241 **40 Claims**



1. In a coke oven installation of the type including first and second openings extending through an oven roof into respective oven chambers, and means for transferring between said chambers charging gases which develop during the charging of said chambers while preventing the escape of said gases to the surrounding environment, the improvement wherein said means comprises:

first and second covers movable between first positions closing said first and second openings, respectively, and second positions uncovering said first and second openings, respectively;

ducts peripherally surrounding said first and second openings, said ducts being filled with a displaceable sealing medium;

first and second housings forming respective first and second compartments enclosing said first and second covers, respectively, at all positions thereof;

said first and second covers having respective apron members extending into said dispaceable sealing medium in respective said ducts when said covers are in said first positions thereof, thereby sealing said compartments from the respective said oven chambers;

means for supporting each said cover in said first position thereof and for limiting the extension of the respective said apron member into said displaceable sealing medium when said cover is in said first position thereof, said means comprising an upper plate of said cover abutting an upper surface of an inner wall defining the respective said duct;

said housings having at lower portions thereof means for sealing said compartments from the exterior;

first and second lifting means, associated with respective said housings, for moving said first and second covers, respectively, within said respective compartments between said first and second positions;

each said housing having at an upper portion thereof means for, when the respective said cover is in said second position thereof, sealing the interior of the respective said compartment from the respective said lifting means and from the surrounding environment, said interior sealing means comprising an opening through the top of said housing and through which passes said lifting means upon movement of said cover to said second position thereof, an enclosed casing above said housing and communicating therewith through said opening, a portion of said lifting means being within said casing when said cover is in said

second position thereof, and a downwardly facing sealing ring fixed to the top of said housing at a location surrounding said opening, the upper surface of said upper plate of said cover sealingly abutting said sealing ring when said cover is in said second position thereof; and

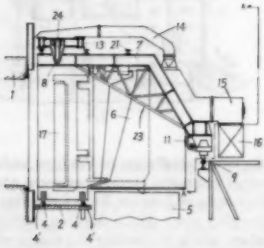
transfer duct means extending between said first and second compartments for, upon said covers being moved from said first positions thereof, transferring charging gases between said chamber openings via said compartments.

4,465,558

COKE GUIDE CAR HAVING LOAD DISTRIBUTING STRUCTURE

Yoshiteru Kitano, Tokyo, Japan, assignor to Koritsu Machine Industries Limited, Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,493
Int. Cl.³ C10B *33/14, 43/02, 45/00*
U.S. Cl. 202—262 **1 Claim**



1. In an arrangement having a coke guide car comprising a base carriage which runs with its wheels riding on a pair of rails laid on a platform in front of a coke oven battery, vertical pillars fixed at the base carriage and a plurality of upper beams horizontally mounted to and spanning over the vertical pillars, the improvement which comprises:

a pair of parallel beams whose inner portions are horizontal and positioned under and perpendicular to the upper beams and whose outer portions are bent down at a slant and extent to a third rail laid outside of a quencher track to ride thereon by means of wheels therefor;

a plurality of girders mounted between and spanning the horizontal portions of the parallel beams;

plural pairs of rails mounted under the girders and adapted to hang a door lifter, a coke guide cage, a jam cleaner, and a coke dust collecting hood of the coke guide car; and

pairs of fitting plates hung from the upper beams and to which the inner portions of the parallel beams are jointed by means of joint pins and wherein the positions of said fitting plates and joint pins are capable of being changed in a manner to evenly distribute the total load of the guide car.

4,465,559

ATOMIZATION/DISTILLATION SYSTEM

Vann Y. Won, 6697 Gloria Dr., Sacramento, Calif. 95831

Filed Jul. 30, 1982, Ser. No. 403,698
Int. Cl.³ B01D *3/08*
U.S. Cl. 203—90 **12 Claims**

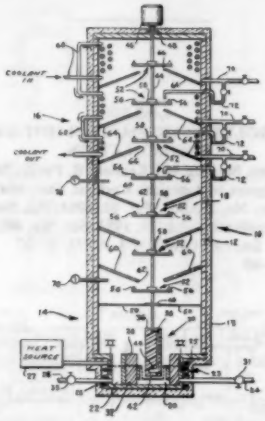
1. An atomization/distillation unit for separating components of a mixture comprising:

a housing, said housing forming a chamber therein; means situated adjacent the bottom portion of said chamber for receiving said mixture therein, and means connected to said mixture receiving means for feeding said mixture to said mixture receiving means at a predetermined rate;

means operably associated with said mixture receiving means for heating said mixture to a preselected temperature, said preselected temperature being sufficient to vaporize at least one of said components of said mixture but insufficient to vaporize the entire mixture;

means operably positioned within said mixture receiving means for atomizing said mixture thereby spraying said mixture in mist form into said chamber in order to aid in the vaporization of said one component;

means operably connected to said atomizer means for propelling said vaporized component upward in said chamber



and propelling the remaining mixture toward the sides of said housing;

means located adjacent the top portion of said chamber for cooling said vaporized component in order to produce a distillate of said vaporized component; and

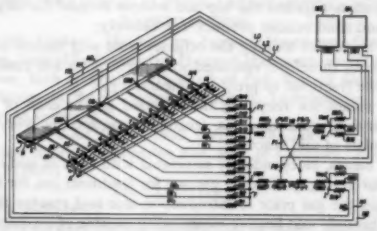
means located adjacent the top portion of said chamber for removing said distillate from said atomization/distillation unit.

4,465,560

METHOD AND DEVICE FOR PROTECTING THE ANODES OF ELECTROLYTIC CELLS AGAINST OVERLOADS, SHORT CIRCUITS AND UNBALANCES

Ferdinando Lo Vullo, Ronco Secondo; Emanuele Malvezzi, Siracusa, and Primo Balboni, Frassine, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 2, 1983, Ser. No. 490,358
Claims priority, application Italy, May 5, 1982, 21102 A/82
Int. Cl.³ C25B *1/36, 15/02, 15/06*
U.S. Cl. 204—1 R **5 Claims**



1. A method for the automatic protection against overloads of anodes placed in electrolytic cells, particularly in mercury cathode cells, in which the single cells are connected in series through anodic ascent bars and provided with a set of anodes supported by moving frames or the like, characterized in that it comprises:

indirectly detecting the average currents of two semicells forming the cell to be protected, by measuring the potential difference of the anodes of both the two semicells with respect to the bottom of the next cell, preferably the preceding one, in order to obtain two signals or average voltages, equal to each other when the cell is in balance, and different from each other when the cell is not in balance, in this last case the difference value between said two signals being dependent on the magnitude of the overload;

measuring the two average potentials of the semi-bottoms of said next cell, the difference between which exactly corresponds to the part of the difference between said avarage voltages which is due only to the position of the overloaded anode; then

eliminating or compensating said bottom voltages of the next cell by bridge-connecting said average voltages of the two semicells with said two average potentials of cell bottom, applied in an inverted way, in order to obtain two voltages which depend only on the current unbalance of the two semicells; then

obtaining two unbalance signals, depending on the cell loads, by connecting in said bridge a potentiometric device with double measuring elements, calibrated according to values different from zero, so that, when the cell is in balance, said two unbalance signals assume negative increasing values, such as to actuate alarm devices or to operate anode-lifting means, when the value of one of said signals is zero, i.e., when a semicell overloads, with respect to the other, by the percentage corresponding to the pre-established calibration value on said potentiometric device.

4,465,561

ELECTROPLATING FILM-FORMING METALS IN NON-AQUEOUS ELECTROLYTE

Thinh Nguyen, Onex, Switzerland; Jean-Marie Fresnel, St. Genis, France, and Henri B. Beer, Heide-Kalmthout, Belgium, assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Feb. 16, 1983, Ser. No. 467,153

Claims priority, application European Pat., Feb. 18, 1982, 82810075

Int. Cl.³ C25D *3/44, 5/30, 5/44;* C25F *3/04*

U.S. Cl. 204—58.5 **7 Claims**

1. A method of electroplating metals such as lead, silver, copper, calcium, antimony, tin, cadmium, nickel and zinc and alloys of these metals onto a substrate of a film-forming metal from the group of aluminum, titanium, zirconium, niobium, molybdenum, tungsten, tantalum and alloys thereof, which consists of placing the substrate in an etching plus electroplating solution comprising ions of the metal(s) to be plated, aluminum halide and an aromatic hydrocarbon; removing surface oxide from the film-forming metal substrate in said etching plus electroplating solution by reaction with the aluminum halide and the metal(s) in solution to form soluble complexes; followed by cathodically connecting the substrate and passing electrolysis current to electroplate the metal(s) in said etching plus electroplating solution onto the oxide-free surface.

4,465,562

PROCESS FOR SURFACE TREATMENT OF ALUMINUM ARTICLE

Tsuneo Kadooda, Kakogawa, Japan, assignor to Honny Chemicals Company, Limited, Kobe, Japan

Continuation of Ser. No. 148,929, May 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 111,299, Jan. 11, 1980, abandoned. This application Feb. 9, 1982, Ser. No. 347,147

Int. Cl.³ C25D *11/24*

U.S. Cl. 204—38 A **4 Claims**

1. A process of forming a water-insoluble polymer coating layer on a surface of an aluminum article consisting essentially of dipping an aluminum article which has been anodically oxidized and which has a surface structure in an active state into a composition consisting essentially of a polymer latex, said polymer latex having a pH value below 3.0, and being prepared by emulsion polymerization of one or more ethylenically unsaturated monomers whereby the polymer particles of said latex are negatively charged, said composition being substantially free of any oxidizing agent, and drying the polymer coated article.

4,465,563

ELECTRODEPOSITION OF PALLADIUM-SILVER ALLOYS

Fred I. Nobel, Sands Point, N.Y., assignor to LeaRonal, Inc., Freeport, N.Y.

Filed Dec. 22, 1982, Ser. No. 452,144

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 N **13 Claims**

1. An aqueous electroplating solution for the electrodeposition of palladium-silver alloys comprising a soluble palladium compound, a soluble silver compound and water soluble organo sulfonic acid in an amount sufficient to maintain the palladium and silver compounds in solution.

4,465,564

GOLD PLATING BATH CONTAINING TARTRATE AND CARBONATE SALTS

Augustus Fletcher, Bristol, Conn.; David N. Cockayne, FanLing, Hong Kong, and William L. Moriarty, South Meriden, Conn., assignors to American Chemical & Refining Company, Inc., Waterbury, Conn.

Filed Jun. 27, 1983, Ser. No. 507,763

Int. Cl.³ C25D *3/48, 3/62*

U.S. Cl. 204—44 **15 Claims**

1. An aqueous gold plating bath comprising, on a per liter basis: about 0.005 to 0.2 gram mole of gold in solution; a tartrate salt providing about 0.1 to 0.4 gram mole of tartrate radical; and a carbonate salt or acid salt providing about 0.2 to 1.5 gram moles of carbonate radical, said bath having a pH of about 7.5 to 13.0.

4. The bath of claim 1 additionally comprising a minor amount of a metallic additive selected from the group consisting of thallium, arsenic, copper, cadmium, zinc, palladium, and mixtures thereof.

4,465,565

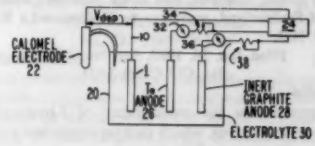
CDTE PASSIVATION OF HGCDTE BY ELECTROCHEMICAL DEPOSITION

Kenneth R. Zanio, El Toro, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 28, 1983, Ser. No. 479,545

Int. Cl.³ C25D *9/08, 7/12, 5/02*

U.S. Cl. 204—56 R **9 Claims**



1. A method for passivating a layer of photoconductive crystalline HgCdTe, comprising the step of lattice-matching a thin passivating layer of electrically insulating crystalline CdTe onto an exposed surface of the HgCdTe by means of cathodic electrochemical deposition; wherein:

the HgCdTe layer is a cathode immersed in a liquid electrolyte containing cadmium ions and tellurium ions in solution;

the deposition is performed at a temperature of between room temperature and 150° C.;

the concentration of the cadmium ions in solution is between 0.5 mole/liter and 1 mole/liter;

the concentration of tellurium ions in solution is between 10^{-5} moles/liter and 10^{-3} moles/liter;

the pH of the solution is approximately 1.4 to 3.5; and

the plating current density is nominally between 0.1 ma/cm^2 and 0.5 ma/cm^2.

4,465,566

METHOD OF PRODUCING ANHYDROUS ALUMINUM CHLORIDE FROM ACID LEACH-DERIVED ACH AND THE PRODUCTION OF ALUMINUM THEREFROM

Raouf O. Loutfy, and James C. Withers, both of Tucson, Ariz., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 20, 1982, Ser. No. 400,198

Int. Cl.^{3} C25C *3/06*; C01F *7/58*

U.S. Cl. 204—67 **10 Claims**

1. A method of producing aluminum by electrolytically reducing anhydrous aluminum chloride from iron and phosphorous or magnesium-containing aluminum hexahydrate crystals comprising:

(a) leaching aluminous raw material containing phosphorous or magnesium with a hydrochloric acid leach liquor to dissolve the alumina fraction into soluble aluminum chloride;

(b) separating said leach liquor from any solids present;

(c) removing all soluble iron chloride from said liquor to obtain a substantially iron free, aluminum hloride-containing pregnant liquor;

(d) crystallizing said pregnant liquor to produce a separable slurry of phosphorous or magnesium-containing aluminum hexahydrate (ACH) crystals;

(e) heating said phosphorous or magnesium-containing ACH crystals from said slurry to a temperature of about 200° C. to 450° C. to produce partially calcined ACH (PCACH);

(f) chlorinating said PCACH in the presence of chlorine and a reductant to produce said anhydrous aluminum chloride; and

(g) electrolytically reducing said anhydrous aluminum chloride to produce aluminum and chlorine.

4,465,567

PROCESS FOR THE MANUFACTURE OF 3-HYDROXY-2-CYCLOALKEN-1-ONE DERIVATIVES

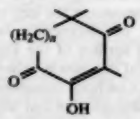
Hansjörg Grass, Muttenz, and Erich Widmer, Münchenstein, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 26, 1983, Ser. No. 461,092

Int. Cl.^{3} C25B *3/00*

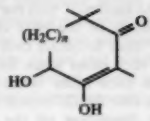
U.S. Cl. 204—75 **17 Claims**

1. A process for the manufacture of 3-hydroxy-2-cycloalken-1-one derivatives, which process comprises cathodically reducing a compound of the formula



I

wherein n is the integer 0 or 1, to a compound of the formula



II

wherein n is, again, the integer 0 or 1.

4,465,568

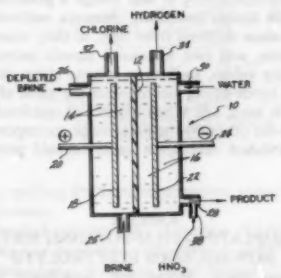
ELECTROCHEMICAL PRODUCTION OF $KNO_3/NANO_3$ SALT MIXTURE

Ronald L. Dotson; Ronald C. Miles, and Larry D. Carpenter, all of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 16, 1981, Ser. No. 322,000

Int. Cl.^{3} C25G *1/34*

U.S. Cl. 204—98 **48 Claims**



4. A process for producing a mixture consisting essentially of sodium and potassium hydroxides which comprises:

(a) feeding a brine comprised of a mixture of sodium chloride and potassium chloride to the anolyte compartment of an electrolytic cell having an anolyte compartment and a catholyte compartment sealingly separated by a permselective, cation exchange hydraulically impermeable membrane, and

(b) electrolyzing said brine to produce a catholyte solution comprised of a mixture of sodium hydroxide and a potassium hydroxide, said catholyte solution being substantially free of chloride ions.

4,465,569

METHOD OF PRODUCING ZINC FROM CHLORIDE SOLUTIONS WHICH CONTAIN CHIEFLY IRON, COPPER AND ZINC

Arne Bjune, Hillaveien 34, 2013 Skjetten; Gunnar H. Boe, Fuglevikkleiva 40, 4600 Kristiansand, and Tore Danielssen, Åsveien 20, 4620 Vågsbygd, all of Norway

Division of Ser. No. 262,299, May 11, 1981, Pat. No. 4,421,616, which is a continuation-in-part of Ser. No. 255,475, Apr. 20, 1981, abandoned, which is a continuation of Ser. No. 137,569, Apr. 7, 1980, abandoned. This application Jul. 11, 1983, Ser. No. 512,726

Claims priority, application Norway, Apr. 17, 1979, 791261

Int. Cl.^{3} C25C *1/16*; C25G *9/00*

U.S. Cl. 204—115 **12 Claims**

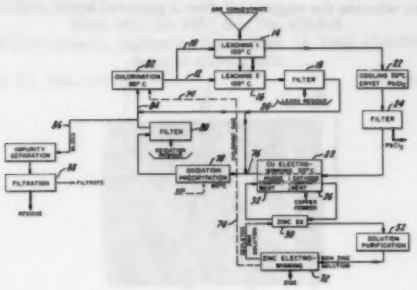
1. Method for producing zinc metal from chloride solutions containing iron, copper and zinc by liquid-liquid extraction and electrolysis which comprises the steps of:

(a) forming a chloride solution containing iron, copper and zinc chlorides which contains not more than about 50 grams per liter of copper,

(b) contacting said chloride solution with tri-n-butylphos-

phate which selectively extracts and removes zinc chloride from the iron and copper chlorides in said solution,

(c) contacting said tri-n-butylphosphate with an aqueous medium which extracts and removes zinc chloride from said tri-n-butylphosphate,



(d) feeding the aqueous medium with said extracted zinc chloride into an electrolytic cell in which zinc metal is deposited at the cathode by electrolysis and removed from the cell, and

(e) recycling used electrolyte from the cell as the aqueous medium for extracting and removing zinc chloride from said tri-n-butylphosphate.

4,465,570

PROCESS FOR PRODUCING HYDROGEN

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Kanagawa, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 217,013, filed as PCT JP80/00064, Apr. 8, 1980, published as WO 80/02162, Oct. 16, 1980, § 102(e) dated Nov. 26, 1980, abandoned.

This application Sep. 30, 1982, Ser. No. 431,555

Claims priority, application Japan, Apr. 10, 1979, 54-42544

Int. Cl.³ C25B 1/04

U.S. Cl. 204—129 **9 Claims**

9. A process for producing hydrogen by electrolysis, which comprises:

passing an aqueous solution of an alkali hydroxide into the anode compartment of an electrolysis cell containing an electrode configuration of a gas and liquid permeable anode formed from a platinum group metal, an alloy of a platinum group metal or an oxide of said metal or alloy thereof, graphite, nickel or a nickel containing oxide, bonded to one surface of a fluorinated polymer cationic exchange membrane having carboxylic acid groups of an ion exchange capacity of 0.5 to 4.0 meq/g dry resin and a gas and liquid permeable cathode formed from iron, nickel, stainless steel, or stabilized Raney nickel or carbon supporting a precious metal bonded to the remaining surface of said membrane; and

electrolyzing the aqueous solution in said cell.

4,465,571

THIODIPROPIONOYL BIS(HALO 5-NORBORNENE 2,3-DICARBOXYLIC ACID HYDRAZIDE) ADDITIVES FOR POLYMERS

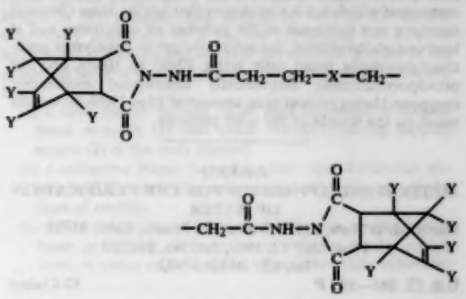
Ralph H. Hansen, Lincoln, Mass., assignor to Canusa Coating Systems Limited, Ontario, Canada

Filed Nov. 8, 1982, Ser. No. 439,865

Int. Cl.³ C07D 209/94; C08K 5/34

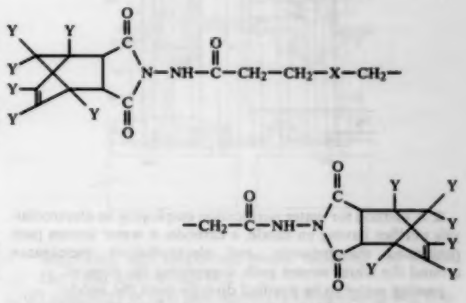
U.S. Cl. 204—159.2 **18 Claims**

1. A compound of the formula (I)



where X is S or S-S and Y is Cl or Br.

14. As an article of manufacturer, a heat recoverable article comprising a polymer and the compound of formula (I)



in an amount sufficient to impart flame retardant and antioxidant properties in the presence or absence of an additional antioxidant, where S is S or S-S and Y is Cl or Br.

4,465,572

RIPENING AGENT FOR ACRYLIC PLASTISOLS

Boynton Graham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 309,202, Oct. 5, 1981, abandoned, which is a continuation of Ser. No. 210,552, Nov. 26, 1980, abandoned, which is a continuation of Ser. No. 64,984, Aug. 9, 1979, abandoned, which is a continuation of Ser. No. 905,199, May 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 780,087, Mar. 22, 1977, abandoned. This application Feb. 16, 1983, Ser. No. 466,944

The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.

Int. Cl.³ C08F 265/04

U.S. Cl. 204—159.16 **11 Claims**

1. A photosensitive thermally coalescible acrylic resin plastisol or organosol dispersion which comprises particles having a mean diameter in the range of 0.1 to 20 μm of a solid, single-phase, finely divided random acrylic polymer of copolymer containing at least 50% by weight of acrylic units and having an inherent viscosity in the range of 0.1 to 1.5, dispersed in a liquid medium that comprises (a) a liquid compatible with the single-phase particles that is nonvolatile at room temperature, has no substantial solvent activity for the polymer at room temperature, and is not a monomer that has the same chemical structure as a monomer of the polymer or copolymer, and (b) 0.2 to 40% by volume of the total volume of the dispersion of a liquid that is volatile at room temperature and has substantial solvent or swelling action on the polymer at said temperature, the liquid medium of said dispersion containing a nonvolatile

photopolymerizable ethylenically unsaturated monomeric compound which is not a monomer that has the same chemical structure as a monomer of the polymer or copolymer and at least one photoinitiator, the solid polymer or copolymer particles/nonvolatile liquid ratio being 40/60 to 100/0, and the photopolymerizable ethylenically unsaturated monomeric compound being present in an amount of 10 to 150% by weight based on the weight of the solid particles.

4,465,573

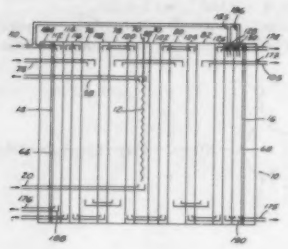
METHOD AND APPARATUS FOR THE PURIFICATION OF WATER

Harry M. O'Hare, 11150 Walnut, El Monte, Calif. 91731

Filed May 12, 1981, Ser. No. 263,038

Int. Cl.³ B01D *57/02*

U.S. Cl. 204—180 P **52 Claims**



2. A method for water purification employing an electrodialysis purifier having an anode, a cathode, a water stream path positioned therebetween, and electrodialysis membranes around the water stream path, comprising the steps of

passing water to be purified directly over the anode;

passing the resulting anolyte through a first turbidity filter of activated charcoal; and

passing the water from the first turbidity filter through the water stream path of the electrodialysis purifier.

49. An electrodialysis purifier, comprising

an anode;

a cathode spaced from said anode;

a water stream path having walls defining a water stream conduit;

waste stream paths having walls defining waste stream conduits on either side of said water stream conduit and between said anode and said cathode; and

a cathode buffer including a cationic exchange membrane positioned adjacent and spaced from said cathode defining a first waste stream buffer conduit therebetween and an anionic exchange membrane positioned adjacent and spaced from said cationic exchange membrane defining a second waste stream buffer conduit therebetween further removed from said cathode.

4,465,574

BLOOD FRACTIONATION IMPROVEMENT

Patrick Mattock, Oxford, and Gordan F. Aitchison, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

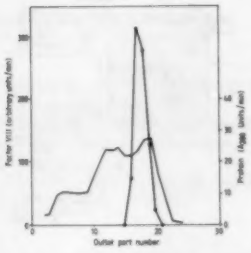
Filed Mar. 29, 1982, Ser. No. 362,662

Claims priority, application United Kingdom, Apr. 8, 1981, 8111056

Int. Cl.³ B01D *57/02;* **C25B** *7/00;* **A61K** *39/00*

U.S. Cl. 204—180 R **3 Claims**

1. In a method of purifying an initial Factor VIII containing aqueous solution which comprises subjecting a Factor VIII containing aqueous migrant solution to continuous flow electrophoresis by injecting the solution into a second aqueous solution, laminarly flowing in an annular separation chamber as a carrier solution for the migrant solution and stabilised by means of an angular velocity gradient, and applying a constant electric field across the resulting mixture to produce a differential movement of the Factor VIII component of the migrant solution with respect to the other major components of the solution perpendicular to the direction of flow of the layer; and collecting the separated Factor VIII component, the improvement wherein the migrant solution is prepared by



(i) contacting the initial Factor VIII containing aqueous solution with ethanol under conditions to precipitate Factor VIII; and

(ii) removing and redissolving the precipitation in an aqueous medium and adjusting the pH to be within the range of 7.5 to 8.6.

4,465,575

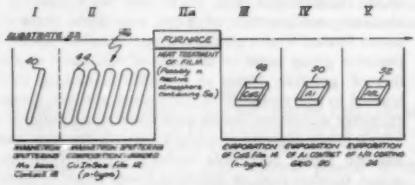
METHOD FOR FORMING PHOTOVOLTAIC CELLS EMPLOYING MULTINARY SEMICONDUCTOR FILMS

Robert B. Love, and Uppala V. Choudary, both of Chatsworth, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 304,520, Sep. 21, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,418

Int. Cl.³ C23C *15/00;* **H01L** *31/18*

U.S. Cl. 204—192 S **13 Claims**



1. A method for use in the manufacture of photovoltaic cells having a film of a Cu-ternary semiconductor compound made up of a plurality of constituent elements, comprising the steps of:

magnetron sputtering at least two constituent elements of the Cu-ternary compound simultaneously onto a substrate in a first preselected proportion; and

subsequently magnetron sputtering said at least two constituent elements simultaneously onto the substrate in at least one other preselected proportion;

whereby a composite sputtered film of the Cu-ternary compound having a preselected concentration gradient of at least one of the constituent elements is produced on the substrate.

4,465,576

METHOD FOR SURFACE TREATMENT OF CARBON CATALYST

Akira Negishi, Yatabemachi, and Ken Nozaki, Ibaraki, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industries, both of Tokyo, Japan

Filed Mar. 16, 1983, Ser. No. 475,948
Claims priority, application Japan, Mar. 24, 1982, 57-46706
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 E 4 Claims

1. A method for enhancing the catalytic activity of a carbon catalyst, comprising the steps of:

disposing said carbon catalyst within a vacuum tank;

exciting a reactive gas with plasma under a gas pressure within said vacuum tank of from 0.1 to 10 Torrs; and

exposing said carbon catalyst to the reacting group produced within said reactive gas for contact therewith for coarsening the surface of said carbon catalyst so as to increase the surface area of said carbon catalyst and thereby achieve said enhanced catalytic activity.

4,465,577

METHOD AND DEVICE RELATING TO THIN-FILM CERMETS

Minas H. Tanielian, Schaumburg, Ill., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Mar. 31, 1983, Ser. No. 480,935
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C 18 Claims

1. A cermet for providing relatively high resistivity in a relatively small space, comprising:

a substrate; and

multiple, ultra-thin, alternating layers of conductive and nonconductive materials on said substrate, each ultra-thin layer having discontinuous islands of particles of each of the above materials.

4,465,578

APPARATUS FOR THE PRECISE ADJUSTMENT OF THE ANODE PLANE OF AN ELECTROLYSIS CELL USED IN THE PRODUCTION OF ALUMINUM

Daniel Duclaux, Seiches s/le Loir; Roger Boinet, Lille; Jean-Louis Gerphagnon, and Jean Baghe, both of St. Jean de Maurienne, all of France, assignors to Aluminium Pechiney, Lyons, France

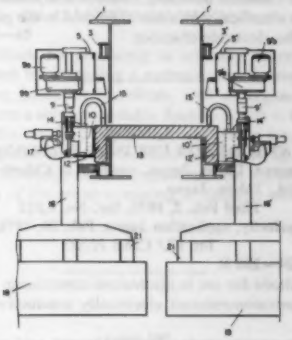
Filed Nov. 17, 1982, Ser. No. 442,309
Claims priority, application France, Dec. 8, 1981, 81 23329; May 27, 1982, 82 09699
Int. Cl.³ C25C *3/10, 3/20*
U.S. Cl. 204—245 5 Claims

1. In an apparatus for the precise adjustment of the anode plane of a cell for the production of aluminum by the electrolysis of alumina dissolved in molten cryolite and wherein the anode system comprises a plurality of prebaked anodes arranged in two parallel lines, suspension rods for the anodes electrically connected to a bus bar permitting the positive application of current and wherein the cathode consists of the produced layer of liquid aluminum, the improvement comprising:

(a) a fixed gantry defined by at least one rigid horizontal beam member (1) said beam member having support means (2) at the ends thereof,

(b) a collective frame formed by two rigid horizontal elements (3,3'), each element corresponding to one of the lines of anodes,

(c) means supporting said horizontal elements on said gantry beam permitting them to travel relative to the gantry beam in rising or descending directions while remaining



horizontal, said supporting means including rod means (3,3') and lever means (4,),

(d) a plurality of first jack means (7) for operation and control of each assembly of rod means and lever means, each first jack means being separately operable and adapted to be coupled for simultaneous operation of all of the first jack means,

(e) a plurality of individual sub-frames (10) mechanically and electrically connected to the anode suspension rods,

(f) a plurality of individual second jack means (9) interconnecting said collective frame and said sub-frames, said second jack means being adapted to individually control the rise and descent of the anodes connected to said sub-frames, and

(g) means for electrically interconnecting said bus bar and said sub-frames.

4,465,579

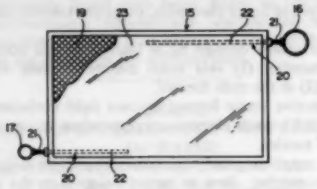
BIPOLAR ELECTROLYTIC CELL

Sinichiro Matuga, Kudamatsu, and Makoto Takenaka, Tokuyama, both of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama, Japan

Filed Apr. 14, 1982, Ser. No. 368,447
Claims priority, application Japan, Apr. 20, 1981, 56-58588
Int. Cl.³ C25B *9/00, 15/08*
U.S. Cl. 204—255 4 Claims

1. A bipolar electrolytic cell comprising: a plurality of unit cells electrically aligned in series; an ion exchange membrane in each of the unit cells dividing the cell into an anode chamber and a cathode chamber; a supply pipe and a discharge pipe for each of the anode and cathode chambers which are respectively connected at one end to the corresponding chamber; common supply and discharge headers to which the other ends of said supply and discharge pipes are respectively connected; the one end of each of the supply and discharge pipes for the anode and the cathode chambers extending deep into the space within the corresponding chamber a distance such that at least 50% of the electrical resistance of the liquid in each pipe is due

to the liquid within the part of the pipe in the space within the electrode chamber, the portion of each pipe within the space



within the chamber including an electrically insulating material which electrically insulates the liquid in the pipe from the liquid in the electrode chamber.

4,465,580

CATHODE FOR USE IN ELECTROLYSIS

Kazuki Kasuya, Chiba, Japan, assignor to Chlorine Engineers Corp. Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,812
Claims priority, application Japan, Feb. 20, 1978, 53-17689
Int. Cl.³ C25B *11/00*
U.S. Cl. 204—290 R **4 Claims**

1. A cathode for use in electrolysis comprising:

(1) a corrosion-resistant electrically conductive substrate; and

(2) a non-porous coating formed thereon, said coating comprising (a) Ni or an Ni alloy and (b) fine particles of a cathode activating material comprising at least one platinum-group metal oxide selected from the group consisting of Pt, Ru, Ir, Rh, Pd and Os oxides, uniformly dispersed in said Ni or Ni alloy (a), said particles having a particle diameter of about 150 microns or smaller and being present in an amount of about 0.1% to about 50% by weight.

4,465,581

COMPOSITE OF TiB_2-GRAPHITE

Leslie H. Juel; Louis A. Joo', both of Johnson City, and Kenneth W. Tucker, Elizabethton, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,129
Int. Cl.³ C25B *11/04*
U.S. Cl. 204—290 R **9 Claims**

1. A process for the production of a composite TiB_2-graphitic carbon article comprising the steps of:

(1) Mixing TiO_2, coke, and a liquid carbonizable binder to form a first plastic dispersion;

(2) Shaping said dispersion to form an article;

(3) Baking said article to carbonize said binder on a cycle from 1 to 10 days rising to a final temperature from 600° to 1100° C.;

(4) Dispersing carbon black in liquid B_2O_3 to form a second dispersion;

(5) Impregnating said baked article with said second dispersion under a pressure from 2 to 15×10^3 Pa at a temperature from 100° to 500° C.;

(6) Heating the impregnated, baked article to at least 1200° C. to a TiB_2 forming temperature and maintaining that temperature until the TiB_2 forming reaction is substantially completed;

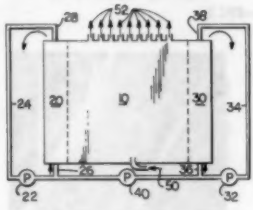
(7) Heating the article from (6) to at least 2100° C. to form said TiB_2-graphitic carbon composite article.

4,465,582

CONTINUOUS FLOW ELECTROPHORESIS APPARATUS

David W. Richman, Chesterfield, Mo., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 24, 1982, Ser. No. 380,976
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—299 R **6 Claims**



6. In a free flow electrophoresis separation apparatus comprising:

a rectilinear, buffer filled separation chamber defined by two elongated, spaced apart, parallel plates forming a front and a back to the chamber, an end comprising a collection manifold assembly means, an end comprising inlet manifold assembly means, and two sides;

two buffer filled electrode chambers, one electrode chamber disposed adjacent to one side of the separation chamber and the second electrode chamber disposed adjacent to the other side of the separation chamber;

At least one sample inlet port located at or near the inlet manifold assembly means wherein an electrical field is applied across the separation chamber by oppositely charged electrodes within the electrode chambers wherein are formed electrolysis by-products; and

means to cause the buffer fluid to flow through the apparatus;

the improvement comprising:

a construction of the apparatus such that the sides of the separation chamber open unobstructedly into the electrode chambers and such that the cross sectional area of each electrode chamber relative to the cross sectional area of the separation chamber is sufficient to support a buffer flow rate which effectively confines electrolysis by-products created at the electrodes to the electrode chambers

and wherein the apparatus further comprises means for controlling the flow of buffer within an electrode chamber such that the flow into the chamber is substantially equal to the flow leaving the chamber, such means comprising fluid conduit means connecting an outlet of an electrode chamber with an inlet to the same electrode chamber in combination with pump means.

4,465,583

ELECTROPHORETIC SEPARATOR

Peter C. Lovegrove, Didcot, England, assignor to United Kingdom Atomic Energy Authority, London, England

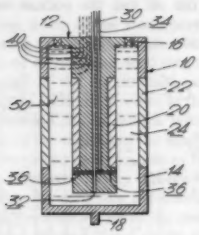
Filed Jun. 20, 1983, Ser. No. 506,027
Claims priority, application United Kingdom, Jul. 7, 1982, 8219682; Apr. 7, 1983, 8309458
Int. Cl.³ G01N *27/26, 27/28*
U.S. Cl. 204—299 R **16 Claims**

15. In a continuous flow electrophoretic separator comprising a rotor, a stator, an annular chamber defined between the rotor and the stator, and a plurality of discharge ducts communicating with the chamber, the improvement comprising a multiple valve assembly comprising:

(a) a plurality of valve bodies, each valve body having an inlet port connectable to one of the discharge ducts, and two outlet ports; and having an inlet valve port a first

outlet valve port and a second outlet valve port extending from a plane face of the valve body; each valve body defining a duct communicating between the inlet port and the inlet valve port, and ducts communicating respectively between one of the outlet ports and the first or the second outlet valve ports;

(b) a plurality of adjustable obturators, each located in the duct between the inlet port and the inlet valve port of a respective valve body, for controlling and variably adjusting the rate of flow of liquid through the respective valve body;



(c) a plurality of cylindrical diverter members, each with a plane face adjacent to the plane face of one of the valve bodies and turnable about an axis between two positions, a groove on the plane face of the diverter member providing communication between the inlet valve port and either the first or the second outlet valve port of the said one of the valve bodies;

(d) a plurality of flat spacer members each defining a circular hole to locate one of the diverter members; and

(e) adjustable resilient clamping means for urging the valve bodies and the diverter members together in alternate relationship.

4,465,584

USE OF HYDROGEN SULFIDE TO REDUCE THE VISCOSITY OF BOTTOMS STREAMS PRODUCED IN HYDROCONVERSION PROCESSES

Edward Effron, Springfield, N.J.; Alexis A. Giese, Houston, Tex., and Gerald A. Melin, Millington, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 14, 1983, Ser. No. 474,902
Int. Cl.³ C10G *1/06, 1/00, 45/00, 9/00*
U.S. Cl. 208—10 **21 Claims**

1. In a process for the hydroconversion of a carbonaceous feed in the presence of molecular hydrogen in a hydroconversion zone wherein a hydroconversion effluent containing liquids and unconverted carbonaceous material is produced, and said effluent is subjected to one or more separation steps downstream of said hydroconversion zone to remove lower molecular weight liquids from said effluent and thereby produce a heavy bottoms stream containing high molecular weight liquids and unconverted carbonaceous material, the improvement which comprises contacting the feed stream to said separation step or steps at a temperature between about 300° F. and about 700° F. with added hydrogen sulfide gas prior to or during said separation step or said separation steps, thereby reducing and controlling the viscosity of said heavy bottoms stream.

4,465,585

CHOLESTERIC MESOPHASE PITCH

Irwin C. Lewis, Strongville, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1982, Ser. No. 363,559
Int. Cl.³ C10C *3/02;* **C09K** *3/34;* **C07C** *2/02*
U.S. Cl. 208—22 **2 Claims**

1. A cholesteric pitch produced by combining a mesophase pitch having ellipsoidal molecules with a compatible optically active compound, said mesophase pitch being produced by reacting a weak Lewis acid with an aromatic hydrocarbon containing at least two condensed rings in the presence of a polar solvent of the aromatic hydrocarbon which solvent is non-reactive with said Lewis acid.

4,465,586

FORMATION OF OPTICALLY ANISOTROPIC PITCHES

Russell J. Diefendorf, Clifton Park, N.J., and Joe G. Venner, Milton, Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 14, 1982, Ser. No. 388,017
Int. Cl.³ C10C *1/20, 1/18, 3/08*
U.S. Cl. 208—45 **10 Claims**

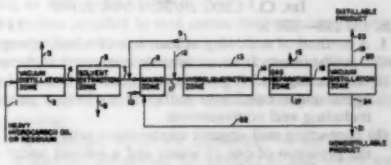
1. In a process for producing an optically anisotropic deformable pitch by extracting a carbonaceous isotropic pitch, prior to fiber formation therefrom, with an organic solvent system to form a solvent insoluble fraction which is then separated from the resulting organic solvent system fraction; and heat treating said insoluble fraction the improvement which comprises employing as said organic solvent system at least one member of the group consisting of dioxane, and tetramethylurea.

4,465,587

PROCESS FOR THE HYDROLIQUEFACTION OF HEAVY HYDROCARBON OILS AND RESIDUA

Diwakar Garg, Macungie, and Robert N. Miller, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 28, 1983, Ser. No. 470,798
Int. Cl.³ C10G *67/04*
U.S. Cl. 208—87 **18 Claims**



1. A process for the hydrogen donor solvent hydroliquefaction of a heavy hydrocarbon oil or residuum having an API gravity at 60° F. of less than 20° comprising the steps of:

(a) contacting said heavy hydrocarbon oil or residuum with an extracting solvent to remove lighter hydrocarbon components which constitute solvent soluble components of the oil or residuum

(b) mixing the solvent extracted residue oil or residuum with a hydrogen donor solvent having a boiling point of at least 375° F. to produce a liquefaction feedstock;

(c) hydroliquefying said feedstock in the presence of a hydrogen atmosphere at a pressure of at least 500 psia and a temperature of at least 650° F.;

(d) separating the hydroliquefied product of step (c) from any gas phase which exists in the product;

(e) separating said hydroliquefied product into a distillable oil fraction and a non-distillable bottom fraction, and

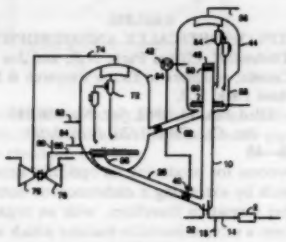
(f) recycling a portion of the distillable oil fraction to step (b) as at least a portion of the hydrogen donor solvent.

4,465,588

PROCESS FOR CRACKING HIGH METALS CONTENT FEEDSTOCK

Mario L. Occelli, Allison Park, and James V. Kennedy, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 6, 1982, Ser. No. 375,379
Int. Cl.³ C10G *11/18, 29/04*
U.S. Cl. 208—120 **35 Claims**



1. A process for the catalytic cracking of a high metals content charge stock which comprises contacting said charge stock under catalytic cracking conditions with a novel catalytic cracking composition comprising a cracking catalyst having high activity and as a separate and distinct entity, a diluent selected from the group consisting of a magnesium-containing clay mineral and a magnesium-containing clay mineral in combination with a heat-stable metal compound, said diluent having a surface area of about 30 to about 1000 m^2/gram and a pore volume of about 0.05 to about 2.5 cc/gram.

4,465,589

REMOVAL OF CONTAMINANTS FROM ORGANIC COMPOSITIONS

Semyon J. Kukes, and Jesse R. Harris, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 12, 1983, Ser. No. 457,340
Int. Cl.³ C10G *29/28, 17/08, 21/02*
U.S. Cl. 208—208 R **11 Claims**

1. A method of removing at least one of metal, nitrogen and sulfur contaminants from an organic composition comprising:
(a) contacting said organic composition with a methylating agent under conditions sufficient to form a precipitate, including said contaminants;
(b) contacting said organic composition with an acid gas in the presence of one of water and a solvent under conditions sufficient to form a distinct phase separable from said organic composition; and
(c) separating said precipitate and said distinct phase from said organic composition.

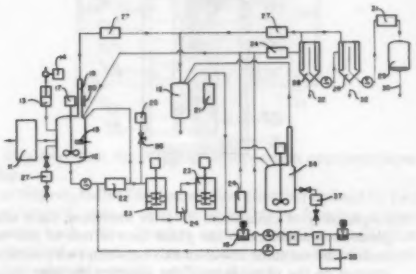
4,465,590

PROCESS FOR ELIMINATING POLYCHLORINATED BI-PHENYLS FROM OILS

Edward C. Adams, Barto, Pa., assignor to American Mobile Oil Purification Co., Inc., Lawrenceville, N.J.

Filed Aug. 17, 1983, Ser. No. 524,133
Int. Cl.³ C10G *17/00*
U.S. Cl. 208—262 **13 Claims**

1. A method for eliminating polychlorinated bi-phenyls from polychlorinated bi-phenyl containing hydrocarbonaceous oil which comprises:
(a) Depositing a measured weight of hydrocarbonaceous oil in a reacting vessel;
(b) Causing a vacuum to exist in the reacting vessel by evacuating air therefrom;
(c) Raising the temperature of the oil and vacuum distilling the same to remove substantially all water, solvents and light fraction oils therein contained;
(d) Releasing the vacuum to near ambient atmospheric pressure while simultaneously adding an inert gas thereto to form an atmosphere above the mixture such that air is excluded;
(e) Adding to the reacting vessel an amount of liquid sodium to the oil sufficient to eliminate the polychlorinated biphenyls to EPA acceptable levels;
(f) Raising the temperature of the oil to a point which maintains the sodium in liquid condition;
(g) Agitating the oil and the sodium to form a mixture thereof;



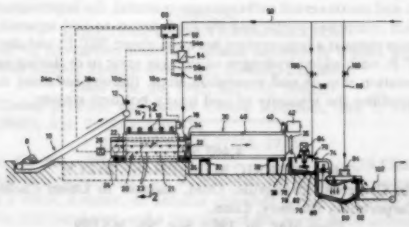
(h) Circulating the oil from the reacting vessel through:
(1) Heat exchangers and then
(2) A mixing means and then
(3) A vibratory means and then
(4) Returning the mixture to the reacting vessel;
(i) Reacting the oil and the sodium until the polychlorinated bi-phenyl content is reduced below EPA minimum requirement therefor;
(j) Cooling the mixture;
(k) Separating the reacted oil from other reactants;
(l) Filtering and purifying the reacted oil.

4,465,591

METHOD AND APPARATUS FOR TREATING WASTE PAPER

Emil Holz, Eningen, and Hagen Hutzler, Reutlingen, both of Fed. Rep. of Germany, assignors to Hermann Finckh Maschinenfabrik GmbH & Co., Pfullingen, Fed. Rep. of Germany

Continuation of Ser. No. 194,823, Oct. 7, 1980, abandoned. This application Jul. 16, 1982, Ser. No. 398,773
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941898
Int. Cl.³ D21D *5/04;* B07B *1/04;* B03B *7/00*
U.S. Cl. 209—3 **9 Claims**



1. Apparatus for sorting dissolvable fibrous material from non-dissolvable material in waste paper, the apparatus comprising:

an elongated cylindrical steeping drum mounted for rotation about its longitudinal axis, said axis being oriented substantially horizontally, the steeping drum having a circumferentially closed wall with an axial inlet at one end for receiving waste paper and an axial outlet at the other end from which the steeped material discharges, the interior of the steeping drum having a plurality of circumferentially spaced, substantially longitudinal ledges for lifting and dropping the waste paper as the drum rotates during the steeping;

means for feeding waste paper into the axial inlet of the steeping drum;

means for adding water to the waste paper to be steeped;

means for rotating the steeping drum about its longitudinal axis, the rate of waste paper feed into the drum, the specific orientation of the longitudinal axis of the steeping drum, the rate of addition of water to the waste paper, the specific orientation of the ledges within the drum, the configuration of the outlet and the speed of rotation being coordinated to yield a steeping time of between 10 and 120 minutes at a substance density of between 10% and 40%;

a mixing chamber for receiving the steeped material after it is discharged from the outlet of the steeping drum;

means for adding diluting water to the steeped material in the mixing chamber, the mixing chamber comprising a rotor for rapidly mixing and circulating the steeped material and diluting water in order to obtain a fibrous suspension, the rate of addition of diluting water to the steeped material in the mixing chamber being coordinated with the rate of steeped material feed into the mixing chamber to achieve a substance density of between 2% and 6%; and

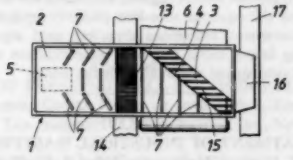
pressureless screening means for sorting the fibrous suspension from the non-dissolvable material, the screening means being located at a level lower than the mixing chamber whereby the material may be transferred by gravity alone from the mixing chamber to the screening means.

4,465,592

VIBRATING CONVEYOR FOR DELIVERING A STREAM OF GREEN PELLETS OF EVEN THICKNESS

Martin Nagl, Rutzenmoos, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed May 27, 1982, Ser. No. 382,584
Claims priority, application Austria, Jul. 27, 1981, 3295/81
Int. Cl.³ B07B *1/08*; B65G *47/24*
U.S. Cl. 209—236 **9 Claims**



1. A vibrating conveyor for delivering a stream of green pellets having a predetermined average diameter to a conveying surface of a wide belt conveyor, the vibrating conveyor comprising

(a) a vibrating deck having a discharge edge and operable to convey the green pellets along a conveyance path to the discharge edge, the discharge edge extending at an acute angle to the conveyance path, and

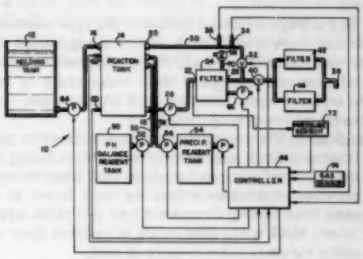
(b) a series of elongated distributing means protruding upwardly from an upper surface of the deck along the entire conveyance path and extending along lines transverse to, and spaced along, the conveyance path, the elongated distributing means having a height which provides a uniform thickness distribution of the green pellets.

4,465,593

RECOVERY OF METAL FROM WASTE WATER BY CHEMICAL PRECIPITATION

Mark F. Wemhoff, Enterprise, Fla., assignor to Environmental Technology (U.S.), Inc., Orlando, Fla.

Continuation-in-part of Ser. No. 360,924, Mar. 23, 1982, abandoned. This application Dec. 29, 1983, Ser. No. 566,606
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—96.1 **13 Claims**



1. A system for the chemical precipitation and removal of metals from waste water comprising:

a fill line;

a reaction tank for receiving waste water from said fill line, the waste water having metals dissolved therein, for receiving a sulfur containing precipitating reagent and for receiving a pH balancing reagent, said reaction tank having an inlet and an outlet;

filter means coupled to said outlet for receiving liquid and precipitated metals from said reaction tank;

a manifold for receiving waste water from said filter means, said manifold coupled between the output of said filter means and the inlet of said reaction tank, said manifold including:

an ion specific electrode responsive to the free sulfur containing precipitant ion content of said waste water from said filter means;

a pH specific electrode responsive to the pH of said waste water from said filter means; and

a first valve means for controlling the flow of said waste water through said manifold;

a drain line coupled to the output of said filter means for receiving fully treated filtrate;

a second valve means for controlling the flow of filtrate through said drain line;

a first fluid circulation means for causing the flow of waste water through said filter means and said manifold and of filtrate through said drain line; and

control means for said first and said second valve means and responsive to said pH and to said ion specific electrodes, said second valve means precluding flow through said drain line and said first valve means permitting flow through said manifold until the free ion content changes to a predetermined value, and thereafter said second valve means permitting flow through said drain line and said first valve means precluding flow through said manifold.

4,465,594

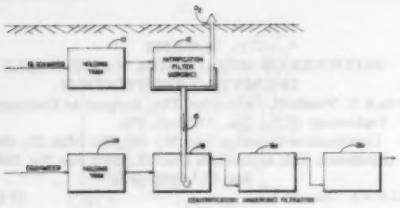
SEWAGE SYSTEM FOR THE TREATMENT OF SEGREGATED DOMESTIC WASTE WATER

Rein Laak, 149 Brown Rd., Storrs, Conn. 06268

Filed Sep. 29, 1982, Ser. No. 427,118

Int. Cl.³ C02C *1/06*

U.S. Cl. 210—151 **3 Claims**



1. In a sewage treatment system of the type wherein human waste and flush water (black water) is segregated from the waste water from laundry and dishwashing waste (grey water) and wherein said segregated black water and grey water are fed to separate septic tanks for each type of waste water, the improvement comprising:

nitrification filter means for receiving black water emanating from said black water septic tank and including alternating layers of sand and stone in said filter means, water pervious membranes below the sand layers to prevent sand from passing downward into said stone layer therebelow, black water inlet means in an upper layer of stone, outlet means in a lower layer of sand,

atmospheric vent means for said nitrification filter means to provide atmospheric oxygen to at least the sand layers of said filter means and to ventilate said sand layers by providing a path for nitrogen in the black water, said vent means achieving aerobic nitrification of the black water filtrate and said filtrate being non-alkaline or slightly acidic with a pH of less than 4,

denitrification filter means for receiving the grey water from said grey water septic tank and also the black water filtrate from said nitrification filter means,

said denitrification filter means comprising a series of adjacent anaerobic reactor trenches, each reactor trench having inlet and outlet means connecting said reactor trenches in series to provide a reductive atmosphere (anoxic) for the black water filtrate and the grey water, each of said reactor trenches including at least one stone layer with said inlet means provided in a lower region thereof, and soil layers below said stone layers in said reactor trenches, said outlet means provided in an upper region of said reactor trenches in communicating with adjacent reactor trench inlet means whereby denitrification of the combined black and grey water is enhanced due to the combining nitrates from the former and carbon an anaerobic matter from the latter.

4,465,595

APPARATUS FOR ASSEMBLY AND DISSASSEMBLY OF A FILTER CONSTRUCTION

Roydon B. Cooper, Lattingtown, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Aug. 15, 1983, Ser. No. 522,991

Int. Cl.³ B01D *27/08*

U.S. Cl. 210—238 **7 Claims**

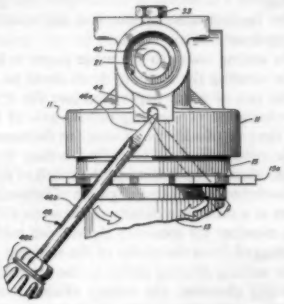
1. An apparatus for selectively jacking a filter canister into and out of engagement with a filter head, said apparatus comprising:

a jackscrew rotatably mounted on said canister and threaded for mating with a threaded portion of said filter head;

means on said filter canister to substantially prevent longitudinal movement of said rotatable jackscrew relative to said canister;

a notch in said filter head for receiving the first end of a lever and providing a fulcrum therefore; and

a plurality of lugs fixed to and circumferentially spaced about the perimeter of said jackscrew such that at least one of said lugs is positioned to provide a point of lever resistance for the central portion of said lever whereby at



least one of said plurality of lugs responds to the application of force to the second end of said lever by creating a mechanical advantage at said at least one of said plurality of lugs which, in turn, creates a torque on said jackscrew to selectively screw or unscrew said jackscrew relative to said filter head causing said filter canister to longitudinally move, without rotation, toward or away from respectively, said filter head.

4,465,596

PROCESS FOR REMOVING HEAVY METAL ASH FROM AN AQUEOUS SOOT SUSPENSION

Werner Soyez, Itzehoe, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,390

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241538

Int. Cl.³ B01D *11/02*

U.S. Cl. 210—634 **5 Claims**

1. In a process for removing heavy metal ash from an aqueous soot suspension wherein said soot suspension is treated in the standard manner with organic adjuvants suitable for the separation of soot which organic adjuvants are not miscible in water, and the aqueous soot-free phase is separated, wherein the improvement comprises directing said aqueous phase, containing heavy metal ash, to a sedimentation stage for settling and subsequent removal from the water.

4,465,597

TREATMENT OF INDUSTRIAL WASTEWATERS

Stewart T. Herman, Hellertown; James B. Pfeiffer, Bethlehem; Richard T. Sewald, Sr., Bethlehem, and Charles J. Sterner, Bethlehem, all of Pa., assignors to Bethlehem Steel Corp., Bethlehem, Pa.

Filed Aug. 10, 1981, Ser. No. 291,439

Int. Cl.³ C02F *1/62*

U.S. Cl. 210—713 **11 Claims**

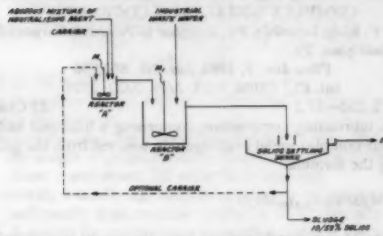
1. An improved method for treating acidic wastewater which contains a quantity of dissolved heavy metals exceeding the level of environmental discharge criteria and having a pH between about 2.5 and 5.0 whereby such quantity of dissolved heavy metals is reduced to a level below environmental discharge criteria and the resolvation of the heavy metals in the acidic wastewater is reduced to a minimum, comprising:

(a) mixing particles of at least one carrier agent taken from

the group consisting of sludge formed in the method, silica, sand and alumina and an aqueous mixture of at least one neutralizing agent taken from the group consisting of sodium hydroxide, potassium hydroxide, calcium carbonate, sodium carbonate, limestone, calcium oxide and dolomitic limestone in a first reactor for a time sufficient to allow the neutralizing agent to be adsorbed on the particles of the carrier agent and to form an aqueous suspension of the carrier-neutralizing agents,

(b) charging the acidic wastewater and a sufficient amount of the aqueous suspension of the carrier-neutralizing agents formed in step (a) into a second reactor wherein the pH of the acidic wastewater is adjusted to between about 8.4 and 10.6,

(c) mixing the acidic wastewater and the aqueous suspension of the carrier-neutralizing agents formed in step (a) in the second reactor for a time to precipitate a portion of the



heavy metals as oxides and/or hydroxides which are precipitated on the surfaces of the carrier-neutralizing agents and the quantity of heavy metals dissolved in the wastewater is reduced to below environmental discharge criteria,

(d) passing the aqueous mixture formed in step (c) to a thickener,

(e) allowing the aqueous mixture to remain in the thickener for a time sufficient to allow the carrier-neutralizing agents coated with the precipitated oxides and/or hydroxides to settle to the bottom of the thickener whereby a sludge containing at least 10 weight percent solids is formed,

(f) removing the sludge from the bottom of the thickener, and

(g) flowing water containing a quantity of dissolved heavy metals which is below environmental discharge criteria over the top of the thickener.

4,465,598

METHOD OF TREATING WELL SERVICING FLUIDS

Roy K. Darlington; George Henry, Jr., and Jack L. Lowell, all of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,191
Int. Cl.³ C02F 1/52
U.S. Cl. 210—721 **8 Claims**

1. A method of removing heavy metal impurities from an aqueous well servicing fluid comprising adding to said fluid an effective amount of an oxidizing agent having a strength sufficient to oxidize water soluble ions of said heavy metal to a higher oxidization state, forming a generally water insoluble compound of the oxidized form of said heavy metal ion, said heavy metal comprising a transition element having a +3 or higher stable oxidation state, and removing said water insoluble compound from said fluid, said fluid comprising a heavy brine having a density of from about 12 to about 19 pounds per gallon and comprising an aqueous solution of a material selected from the class consisting of calcium chloride, calcium bromide, zinc chloride, zinc bromide, and mixtures thereof.

4,465,599

FLOCCULANTS BASED ON POLYMERS CONTAINING WATER-SOLUBLE DIALKYLAMINONEOPENTYL (METH)ACRYLATES

Hans Burkert; Jüergen Hartmann; Dietmar Jung, all of Ludwigshafen; Wilfried Heide, Erpolzheim; Heinrich Hartmann, and Herbert Spoor, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,317
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135279
Int. Cl.³ C02F 11/14
U.S. Cl. 210—734 **3 Claims**

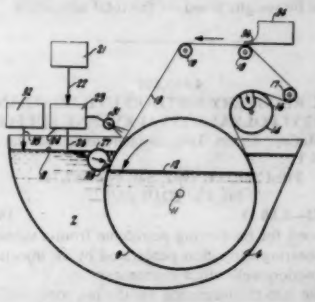
1. A process for flocculating sludge from municipal sewage plants and activated sludge from industrial waste water treatment plants which comprises adding 100 to 350 grams per cubic meter of sludge of a storage-stable flocculant comprising a water-soluble copolymer having a Fikentscher K value of from 150 to 300, wherein said copolymer is prepared by copolymerizing (a) 20–95% by weight of a neutralized or quaternized di-C_1–C_3-alkylaminoneopentyl (meth)acrylate with (b) 5–80% by weight of acrylamide; thereby causing flocculation of said sludge and separating the flocculated solids from said sludge.

4,465,600

MEANS AND METHOD FOR RECOVERING ALGAE

Joseph C. Dodd, 6745 Alisal St., Pleasanton, Calif. 94566

Filed Jan. 6, 1983, Ser. No. 458,760
Int. Cl.³ B01D 37/02
U.S. Cl. 210—777 **6 Claims**



1. A machine for recovering small algae comprising a vat adapted to hold a first liquid having a surface level and containing said small algae, a filter drum mounted in said vat partially below said surface and adapted to rotate in a predetermined direction, a recovery drum rotatably mounted near said vat and above said surface, a filter belt, means for training said filter belt to descend into contact with said filter drum and to extend partly around said filter drum to contact one side of said filter belt with said filter drum, said contact starting at a location substantially at said surface level, and said filter belt being trained partly around said recovery drum to contact the other side of said filter belt with said recovery drum, a separate source of large algae in a second liquid distinct from said first liquid, said large algae being capable of forming a filter aid deposit for filtering said small algae from said first liquid, a means for introducing large algae from said separate source into a container, distributor means adjacent to and open to the descending surface of said filter belt for flowing said second liquid together with said large algae out of said container and onto the side of said filter belt away from said filter drum and adjacent to said location, means for subjecting said filter drum to a pressure difference and inducing flow of said first liquid and said second liquid in one direction through said filter belt while lodging said large algae in a deposit on said one side of

said filter belt, and means for flowing said first liquid and said small algae in said direction through said deposit lodged on said filter belt and through said filter belt itself.

5. A method of recovering non-filamentous small algae from a liquid containing such small algae comprising providing a liquid-pervious filtering surface subject to a pressure difference by having on one side a relatively high pressure and having on the other side a relatively low pressure, forming a filter aid deposit on the one side of said filtering surface with filamentous large algae said large algae being capable of forming a filter aid deposit for filtering said small algae from said liquid and subjecting said filtering surface to said pressure difference and filtering said small algae from said liquid by flowing said liquid through said deposit.

4,465,601

COMPOSITION AND METHOD FOR SERVICING WELLBORES

Andrew J. Pasztor, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 11, 1982, Ser. No. 338,786
Int. Cl.³ E21B *43/00*
U.S. Cl. 252—8.55 R **10 Claims**

1. A method of working over, completing or packing a wellbore including introducing into the wellbore a solids-free fluid comprising an admixture of water and sufficient calcium bromide and methanol to yield the admixture which has a density of at least about 15 lb/gal (1.80 kg/l) and a crystallization point no higher than about 20° C. and wherein zinc, lithium or chromium may be present in the admixture at less than one percent by weight based on the total admixture.

4,465,602

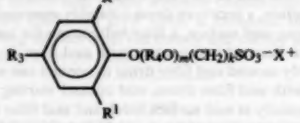
OIL RECOVERY METHOD UTILIZING AN ALKYLARYLPOLYALKOXYALKYLENE SULFONATE

David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,711
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **18 Claims**

1. A process for recovering petroleum from a subterranean petroleum-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via the injection well a drive fluid comprising water having dissolved therein an effective amount of a surface active agent having the general formula:



wherein

R_1 is t-butyl,

R_2 is hydrogen or R_1,

R_3 is an oligomer of propylene or butylene containing from 5 to 30 carbon atoms,

R_4 is an ethylene or 1,2-propylene radical,

m is an integer of from 2 to 20,

k is an integer of from 2 to 4 and

X is a sodium, potassium or ammonium cation;

(B) forcing the fluid through the formation and

(C) recovering petroleum through the production well.

4,465,603

PROCESS FOR PRODUCING SUPERBASIC DETERGENTS FOR LUBRICANT COMPOSITIONS

Paolo Koch, S. Giuliano Milanese, and Alberto Santambrogio, Corsico, both of Italy, assignors to Agip Petroli S.p.A., Rome, Italy

Filed Nov. 30, 1982, Ser. No. 445,742
Claims priority, application Italy, Dec. 3, 1981, 25425 A/81
Int. Cl.³ C10M *1/40*
U.S. Cl. 252—33.4 **4 Claims**

1. A process for the production of superbasic detergents from the group consisting of sulphonates, sulphophenates and mixtures thereof, said process comprising the step of reacting the sulphonate, sulphophenate or a mixture thereof with a hydroxide, or an oxide of an alkali metal or alkaline earth metal in the presence of an ester of carbonic acid.

4,465,604

LUBRICATING COMPOSITIONS AND PROCESS USING COMPLEX METAL CHALCOGENIDES

James P. King, Lansdale, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 9, 1983, Ser. No. 502,786
Int. Cl.³ C10M *1/38, 1/54, 5/22, 5/28*
U.S. Cl. 252—37.2 **23 Claims**

1. A lubricating composition comprising a lubricant and at least one complex metal chalcogenide selected from the group having the formula:

$$M_p(M'O_xA_{4-x})_m.nH_2O$$

where M is a metal selected from the group consisting of: Na, K, Cs, Mg, V, Mn, Fe, Co, Al, Cu, Ga, In, Bi, As, Ni, Zn, Cd, Sb, Sn and Ce;

where M' is a metal selected from the group consisting of Mo and W;

where A is S or Se;

where x ranges from 1 to 3;

where p is 1 or 2;

where m ranges from 1 to 5;

and n ranges from 0 to 6.

4,465,605

BORATED POLYHYDROXYALKYL SULFIDES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 434,803
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—46.3 **17 Claims**

1. A product made by reacting a sulfide of the formula

$$(HO)_xRSR'(OH)_y$$

wherein R and R' are C_1 to C_{30} hydrocarbyl groups or mixtures thereof, the total of carbon atoms from R and R' being from 13 to 33, and either of x and y is 0 to 3, the sum thereof being at least 3, with at last an equimolar amount of a boron compound, the reaction being carried out at from about 75° C. to about 150° C.

7. A lubricant composition comprising a major amount of a lubricant selected from the group consisting of oils of lubricating viscosity and greases thereof and a friction reducing amount of a product made by reacting a sulfide of the formula

$$(HO)_xRSR'(OH)_y$$

wherein R and R' are C_1 to C_{30} hydrocarbyl groups, or mixtures thereof, the total of carbon atoms from R and R' being from 13 to 33, and either of x and y is 0 to 3, the sum thereof being at least 3, with at least an equimolar amount of a boron

compound, the reaction being carried out at from about 75° C. to about 150° C.

4,465,606

STABILIZATION OF HYDROCARBON OIL

Harry P. Orr, Jr., La Habra, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 22, 1982, Ser. No. 400,722
Int. Cl.³ C10M 1/26
U.S. Cl. 252—56 R 28 Claims

1. A composition comprising (1) a major amount of hydroprocessed liquid hydrocarbon, said hydrocarbon being subject to light-induced sediment formation, and (2) a stabilizing additive comprising a polyol ester.

4,465,607

LUBRICATING COMPOSITION CONTAINING POLYTETRAFLUOROETHYLENE, AND A PROCESS AND SYSTEM FOR MANUFACTURING SAME

Eric C. Cottell, Windermere, Bayville, Long Island, N.Y. 11709

Filed Sep. 22, 1982, Ser. No. 421,080
Int. Cl.³ C10M 1/30
U.S. Cl. 252—58 7 Claims

1. A process for producing a lubricating composition comprising the steps of:

mixing the lubricating oil with from about 1% to about 20% by weight of polytetrafluoroethylene particles of between about 1 and about 200 microns in size; and,

violently sonically agitating the mixture at an energy density sufficiently high to cause cavitation of the mixture.

6. A system for producing a lubricating composition consisting of an emulsion of polytetrafluoroethylene and lubricating oil comprising:

lubricating oil supply means;

polytetrafluoroethylene supply means;

mixing means for admixing the lubricating oil and polytetrafluoroethylene particles;

sonic generating means for continuously agitating the admixture to cause cavitation and create a substantially stable emulsion as the admixture continuously moves through the sonic generating means; and,

means for continuously transferring the admixture through the sonic generating means.

4,465,608

PROCESS FOR THE PRODUCTION OF MAGNETIC DISPERSIONS CONTAINING BINDERS

Johannes Geriim, Unterpfaffenhofen-Germering; Burkhard Nippe, Munich; Heinrich Kober, Hohenschaeftlarn, and Robert Kohler, Wessling, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 24, 1982, Ser. No. 391,504
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125567
Int. Cl.³ C04B 35/04; H01F 1/00
U.S. Cl. 252—62.54 11 Claims

1. A process for the production of a magnetic lacquer for a magnetic storage medium comprised of metal powder magnetic pigments prepared by grinding and mixed in dispersion containing binders

which includes the step of,

adding the metal powder magnetic pigment prior to the completion of the grinding of an organic boron compound prepared by either

reacting boric acid

first with polyhydric alcohols having a total of 5 to 11 neighbouring OH groups per boron atom, and

second with polyethylene oxide in a mol ratio of 1:40, based on 1 mol of borate product

then third with a carboxylic acid having from 8 to 18 carbon atoms.

or reacting boric acid

first with polyhydric alcohols having a total of 5 to 11 neighbouring OH groups per boron atom, and

then with a carboxylic acid having 8 to 18 carbon atoms,

said boron compound being added in 3–12 parts, by weight based on 100 parts by weight of metal powder magnetic pigments

and then, after said addition and completion of the grinding,

mixing the ground pigments and additive with polymeric binder selected from the group consisting of copolymers of vinyl chloride, vinyl acetate and vinyl alcohol, polyvinylacetates;

copolymers of vinylidene chloride and acrylonitrile;

and polyurethanes, polycarbonates, phenoxy resins and epoxy resins.

4,465,609

METHOD OF OPERATING A HEAT PUMP OR A THERMAL ENGINE WITH A CHLORO-FLUORINATED HYDROCARBON HAVING AN INCREASED THERMAL STABILITY

Jacques Denis, Tassin La Demi-Lune; Jerome Weill, Lyons, and Alexandre Rojey, Garches, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 11, 1982, Ser. No. 407,218
Claims priority, application France, Aug. 11, 1981, 81 15664
Int. Cl.³ C09K 5/04
U.S. Cl. 252—67 7 Claims

1. In a method of operating a heat pump or thermal engine by use of the vaporization and the condensation of a heat transfer fluid, the improvement comprising operating said heat pump or thermal engine with a heat transfer fluid consisting essentially of at least one chlorofluorinated hydrocarbon containing, in its molecule, 2 or 3 carbon atoms, only one hydrogen atom, at least one chlorine atom per molecule and at most one chlorine atom per carbon atom, and a sufficient number of fluorine atoms to saturate remaining valences, said chlorofluorinated hydrocarbon having a critical temperature of at least 140° C., and selected from those designated as F-226, F-225 and F-224, with F-226 conforming to the formula $CF_3—CHCl—CF_3$, F-225 conforming to the formula $CF_3—CHCl—CF_2Cl$, and F-224 conforming to the formula $CF_2Cl—CHCl—CF_2Cl$.

4,465,610

WORKING FLUIDS FOR RANKINE CYCLE

Naonori Enjo, Suita; Hideki Aomi, and Masahiro Noguchi, both of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Filed Dec. 28, 1982, Ser. No. 453,911
Claims priority, application Japan, Dec. 28, 1981, 56-215859; Feb. 12, 1982, 57-21814; Feb. 12, 1982, 57-21815
Int. Cl.³ C09K 5/04; F25B 9/00
U.S. Cl. 252—67 6 Claims

1. Aqueous working fluids for use with a Rankine cycle comprising at least 81 parts by weight of 2,2,3,3,3-pentafluoropropanol and up to 19 parts by weight of water.

4,465,611

HEAT STORAGE MATERIAL

Michio Yanadori, Hachioji; Seigo Miyamoto, Takahagi, and Keiichi Koike, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,185
Claims priority, application Japan, Dec. 9, 1981, 56-196788
Int. Cl.³ C09K 5/06
U.S. Cl. 252—70 2 Claims

1. A heat storage material comprising calcium chloride-hexahydrate and as nucleating agents strontium oxide, calcium hydroxide and calcium sulfate.

4,465,612

PROCESS FOR CLEANING AND MAINTAINING THE INTERIOR SURFACES OF A MECHANICAL DISHWASHER

Theodor Altenschöpfer, Dusseldorf, and Klaus Schuman, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 226,145, Jan. 19, 1981, Pat. No. 4,392,977. This application Mar. 29, 1983, Ser. No. 480,091

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1982, 3240688

Int. Cl.³ C11D *1/72, 7/50*

U.S. Cl. 252—143 **12 Claims**

1. A process for manual and mechanical cleaning and maintaining the interior surfaces of an unloaded mechanical dishwasher machine as such consisting essentially of applying to the interior of the mechanical dishwasher machine in an unloaded condition a liquid, acid-reacting cleaning and maintenance composition consisting essentially of:

(a) from 5% to 50% by weight of an acid having from 2 to 6 carbon atoms selected from the group consisting of alkanoic acids, hydroxy substituted alkanoic acids, alkane polycarboxylic acids and hydroxy substituted alkane polycarboxylic acids,

(b) from 3% to 20% by weight of a water-soluble alkane polyol having from 2 to 6 carbon atoms and from 2 to 3 hydroxyls in the molecule,

(c) from 0.1% to 10% by weight of a low-sudsing nonionic tenside,

(d) from 0 to 5% by weight of customary additives selected from the group consisting of odorants, dyes, dissolving intermediaries and corrosion inhibitors,

(e) from 0 to 30% by weight of a water-miscible alkanol having from 2 to 4 carbon atoms, and

(f) the remainder to 100% by weight of water, where the amount of water is at least 25% by weight,

based on the total weight of the composition.

4,465,613

ALKYL PHOSPHORIC SALT-HYDROCARBON WAX LATHER CONTROLLED DETERGENT COMPOSITIONS

Malcolm N. A. Carter, Merseyside, England, assignor to Lever Brothers Company, New York, N.Y.

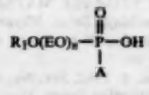
Continuation of Ser. No. 055,138, Jul. 5, 1979, abandoned, which is a continuation of Ser. No. 757,164, Jan. 6, 1977, abandoned. This application Nov. 7, 1980, Ser. No. 205,040

Claims priority, application United Kingdom, Jan. 23, 1976, 266976

Int. Cl.³ C11D *3/36, 11/00*

U.S. Cl. 252—174.16 **21 Claims**

1. A detergent composition for fabric washing in water comprising about 1% to about 90% by weight of an anionic or mixed anionic-nonionic detergent active compound, and about 0.05% to about 20% by weight of an alkyl phosphoric acid having the general formula:



where A is —OH or R_2O, n is 0 and R_1 and R_2 are the same or different C_{16-22} straight or branched chain, saturated or unsaturated alkyl groups, or a salt thereof, and about 0.05% to about 20% by weight of a solid hydrocarbon wax of mineral origin which melts at a temperature of about 20° C. to about 90° C.

4,465,614

ALKANOLAMINIUM CARBOXYLATE SOLVENTS FOR SELECTIVE SO_2 ABSORPTION

H. Lee Trentham, Galveston; John H. Crow, Houston, both of Tex., and Farwell C. Boston, Shreveport, La., assignors to Trentham Corporation, Houston, Tex.

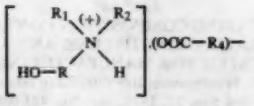
Division of Ser. No. 260,308, May 4, 1981, Pat. No. 4,363,791. This application Aug. 26, 1982, Ser. No. 411,709

Int. Cl.³ B01F *1/00*

U.S. Cl. 252—364 **6 Claims**

1. A preferential absorption solvent for the absorption of sulfur dioxide, comprising:

an aqueous solution of an alkanolaminium carboxylate, wherein the alkanolaminium carboxylate is a compound of the formula



wherein R is an alkylene group having from 2 to 4 carbon atoms, R_1 and R_2 are each independently an alkanol group having from 2 to 4 carbon atoms or an alkyl group having from 1 to 4 carbon atoms or a hydrogen atom, and R_4 is an alkyl group of from 1 to 3 carbon atoms.

4,465,615

ELECTROCONDUCTIVE RESIN COMPOSITION AND A VIDEODISC RECORD

Akio Hata; Hiroshi Kake, and Noriki Fujii, all of Shinnan'yo, Japan, assignors to Tokuyama Sekisui Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 367,988, Apr. 13, 1982, Pat. No. 4,396,660. This application Apr. 26, 1983, Ser. No. 488,763

Claims priority, application Japan, Apr. 22, 1981, 56-61683

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—511 **4 Claims**

1. An electroconductive resin composition consisting essentially of blend of 5 to 30% by weight of carbon black and a graftpolymer which is obtained by graft-polymerizing 99 to 76 parts by weight of monomeric vinyl chloride to 1 to 15 parts by weight of an ethylene-vinyl acetate copolymer, said copolymer containing therein 10 to 65% by weight of vinyl acetate.

4,465,616

FORMULATION OF ELECTRICALLY CONDUCTIVE PLASTICS

Jordan R. Nelson, Trenton, N.J.; William K. Wissing, and Victor S. Dunn, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 231,291, Feb. 4, 1981, abandoned. This application Oct. 12, 1983, Ser. No. 541,494

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—511 **7 Claims**

1. In a method of mass-producing conductive plastic capacitive information records by compression molding a composition comprising conductive carbon black particles, a molding resin comprising a homopolymer or copolymer of vinyl chloride and suitable additives compatible therewith, the improvement wherein the records are produced without batch-to-batch nonuniformity in predetermined performance properties resulting from variation in the physical properties of the carbon black by preparing each batch of said molding composition with a precise weight of carbon black determined by:

(a) determining the melt viscosity of a conductive molding composition from which records having the desired preformance properties have been prepared, wherein the total weight percent of carbon black and resin in said composition and said batch is constant;

(b) measuring the surface area of samples of carbon black to be utilized in a given batch of molding composition and determining the average surface area thereof; and

(c) determining the precise weight percent of conductive carbon black required for said batch of molding composition according to a relationship selected from

$$\log n = k_1 + k_2 \times W + k_3 \times W \times SA,$$

$$\log n = k_4 + k_5 \times W \times k_6 \times SA, \text{ and}$$

$$\log n = k_8 \times W \times SA$$

wherein n is the melt viscosity provided in step (a), W is the weight percent of the carbon black present in said composition, SA is the average surface area of the carbon black particles and each of k_1 through k_7 is an empirical constant, wherein said constants correlate with the method utilized in step (b) to determine surface area.

4,465,617

METHOD FOR PREPARING A MOLDING COMPOSITION

Bruce A. Whipple, Mooresville, and Victor S. Dunn, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 231,287, Feb. 4, 1981, abandoned. This application Oct. 12, 1983, Ser. No. 541,495

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—511 **8 Claims**

1. In a method of mass-producing conductive plastic capacitive information records by compression molding a composition comprising conductive carbon black particles, a molding resin comprising a homopolymer or copolymer of vinyl chloride and suitable additives compatible therewith, the improvement wherein the records are produced without batch-to-batch nonuniformity in predetermined performance properties resulting from variation in the physical properties of the carbon black by preparing each batch of said molding composition with a precise weight of carbon black determined by:

(a) determining the melt viscosity of a conductive molding composition from which records having the desired performance properties have been prepared;

(b) preparing at least two samples of conductive molding composition from carbon black to be utilized in a given batch, said samples containing varying weight percents of conductive carbon black, the total weight percent of carbon black and resin being constant in all compositions;

(c) determining the melt viscosity of each of said samples;

(d) plotting the log of the melt viscosity and the carbon black content of the samples and determining therefrom two empirical constants; and

(e) determining the precise weight percent of conductive carbon black required to prepare said batch of molding composition according to the formula

$$\log n = A + B \times W$$

wherein n is said melt viscosity, A and B are the constants and W is the weight percent of conductive carbon black in said composition.

4,465,618

SPIRANIC COMPOUND FOR USE AS A PERFUME OR FLAVOR-MODIFYING INGREDIENT

Peter Fankhauser, Onex, Switzerland, assignor to Firmenich SA, Switzerland

Division of Ser. No. 230,406, Jan. 30, 1981, Pat. No. 4,336,197. This application Feb. 24, 1982, Ser. No. 351,787

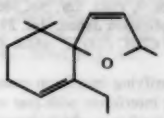
Claims priority, application Switzerland, Feb. 8, 1980, 1013/80

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **3 Claims**

1. A perfume composition which comprises the compound having the formula:

(I)



in admixture with a solvent and/or with other commonly used perfume ingredients.

4,465,619

BUILT LIQUID DETERGENT COMPOSITIONS

Jelles V. Boskamp, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 2, 1982, Ser. No. 438,669

Claims priority, application United Kingdom, Nov. 13, 1981, 8134311

Int. Cl.³ C11D *1/83*

U.S. Cl. 252—540 **4 Claims**

1. A method for stabilizing aqueous built liquid detergent compositions comprising adding from about 0.1 to 0.3% by weight of a polysaccharide hydrocolloid selected from the group consisting of xanthan gum, guar gum, locust bean gum, tragacanth gum and derivatives thereof, to a composition comprising, in an aqueous medium, from 5 to 32% of builder salt and from 5 to 25% by weight of a mixture of an anionic and a nonionic detergent material, the weight ratio between the anionic and nonionic detergent materials lying between 85:15 and 50:50.

4,465,620

PREVENTION OF COPPER PLATING DURING CHEMICAL CLEANING OPERATIONS

Neil E. S. Thompson, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 1, 1983, Ser. No. 519,153

Int. Cl.³ C11D *1/70*; C23F *11/14, 11/16*; C23G *1/02*

U.S. Cl. 252—545 **22 Claims**

1. Composition comprising a blend of at least one α-aminoalkylsulfide and at least one surface active agent.

4,465,621

IMMERSION OIL FOR MICROSCOPY AND RELATED APPLICATIONS

Robert Sacher, Newton, N.J., assignor to R. P. Cargille Laboratories, Inc., Cedar Grove, N.J.

Filed Jul. 1, 1983, Ser. No. 510,069

Int. Cl.³ C09K *3/00*; G02B *1/06*

U.S. Cl. 252—582 **6 Claims**

1. An immersion oil for use in the field of microscopy and related fields thereto, consisting essentially of a butyl benzyl phthalate blended with at least another compound selected from the group consisting of dialkyl phthalate with predominantly linear alkyl chains of mixed seven, nine and eleven carbon lengths and chlorinated paraffin containing between 50 to 70 percent by weight of chlorine to provide an immersion oil having a refractive index in the range between 1.49 to 1.53.

4. An immersion oil for use in the field of microscopy and related fields thereto, consisting essentially of a blend of dialkyl phthalate, with predominantly linear alkyl chains of mixed seven, nine and eleven carbon lengths, a butyl benzyl phthalate and a chlorinated paraffin containing between 50 to 70 percent by weight of chlorine to provide an immersion oil having a refractive index in the range between 1.49 to 1.53.

4,465,622

METHOD FOR PURIFYING INTERFERON

Masahiro Nobuhara; Kiyoshi Yamaguchi, both of Saitama, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,872
Claims priority, application Japan, Jul. 29, 1981, 56-118865
Int. Cl.³ C07C *103/52*; A61K *45/02*
U.S. Cl. 260—112 R **19 Claims**

1. A method for purifying interferon comprising contacting a solution containing interferon with one or more interferon adsorbing effective adsorbents which contain a high polymer of acrylonitrile to adsorb the interferon onto said adsorbent, and thereafter eluting the interferon with an interferon eluting effective eluant to produce an eluate.

4,465,623

PROTHROMBIN COMPLEX CONCENTRATES, PREPARATION AND APPLICATION THEREOF

Maryse Chanas, Sainte-Foy-les-Lyon; Jacques Liautaud, Limonest; Jean Pla, Sainte-Foy-les-Lyon, all of France, and Edward Shanbrom, Santa Ana, Calif., assignors to Societe Anonyme dite: Institut Merieux, Lyons, France

Continuation of Ser. No. 227,041, filed as PCT FR80/00069, published as WO 80/02426, Nov. 13, 1980, § 102(e) dated Dec. 29, 1980, abandoned.
This application Mar. 17, 1983, Ser. No. 476,126
Claims priority, application France, May 4, 1979, 79 11272
Int. Cl.³ C07G *7/00, 17/00*; A61K *35/16*
U.S. Cl. 260—112 B **14 Claims**

1. A process for preparing a prothrombinogenic complex concentrate essentially free of activated prothrombinogenic complex comprising contacting a source of prothrombinogenic complex comprising prothrombinogenic complex and antithrombin III with, as an adsorbing agent, alumina gel, in the presence of heparin so that said source and said heparin are adsorbed thereon, and thereafter eluting simultaneously said source and said heparin from said adsorbing agent, said eluting being carried out with a buffer solution at a pH of 7.5–8.5.

4,465,624

PROCESS FOR PRODUCING ERYTHROPOIETIN

Hideo Chiba, Uji; Ryuzo Sasaki, Kyoto, and Masatsugu Ueda, Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Higashi, Japan

Filed Dec. 9, 1983, Ser. No. 559,890
Claims priority, application Japan, Feb. 21, 1983, 58-26399
Int. Cl.³ A61K *37/24*; C07G *7/00*
U.S. Cl. 260—112 R **5 Claims**

1. A process for producing highly pure erythropoietin from a material containing erythropoietin, which comprises

bringing said material containing erythropoietin into contact with an adsorbent having monoclonal anti-erythropoietin antibody, said monoclonal anti-erythropoietin antibody being prepared from hybridoma in which said hybridoma is obtained by cell-fusing a myeloma cell and a spleen cell of an experimental animal immunized by erythropoietin,

adsorbing said erythropoietin on said monoclonal anti-erythropoietin antibody in said adsorbent,

eluting said erythropoietin from said adsorbent, and

collecting the eluted erythropoietin.

4,465,625

PENTAPEPTIDES AND PROCESS FOR THEIR PREPARATION

Sándor Bajusz; András Rónai; József Székely; László Gráf, and Zsuzsa Mohai née Nagy, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar, Budapest, Hungary

Filed Sep. 6, 1977, Ser. No. 830,831
Claims priority, application Hungary, Sep. 16, 1976, GO 1350
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E **1 Claim**

1. L-tyrosyl-D-methionyl-glycyl-L-phenylalanyl-L-proline amide.

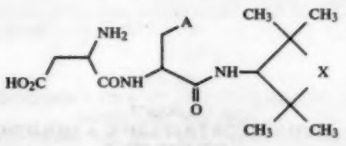
4,465,626

PROCESS FOR PREPARATION, ISOLATION AND PURIFICATION OF DIPEPTIDE SWEETENERS

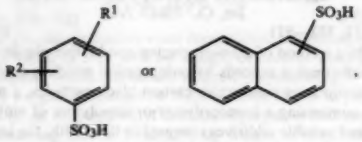
Constantine Sklavounos, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 300,366, Sep. 8, 1981, Pat. No. 4,375,430. This application Dec. 13, 1982, Ser. No. 449,039
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **25 Claims**

1. A process for the preparation of an L-aspartyl-D-amino acid dipeptide amide of the formula

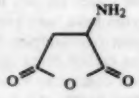


wherein A is hydrogen or hydroxy and X is S, SO or SO_2, in the form of an acid addition salt with an aromatic sulfonic acid of the formula

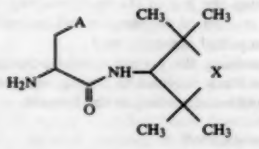


wherein R^1 is hydrogen, methyl or chloro and R^2 is hydrogen or methyl; which comprises

(a) reacting an acid addition salt of L-aspartic acid anhydride of the formula



with a D-amino acid amide of the formula



wherein A and X are as previously defined; and

(b) crystallizing the resulting L-aspartyl-D-amino acid dipeptide with said sulfonic acid.

4,465,627

SULFO GROUP-FREE DISAZO, TRISAZO AND TETRAKISAZO COMPOUNDS CONTAINING AT LEASE ONE BASIC OR CATIONIC GROUP

Reinhard Pedrazzi, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

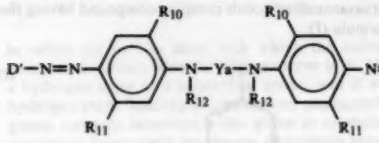
Filed Aug. 7, 1981, Ser. No. 290,912

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030196

Int. Cl.³ C09B 33/02, 33/18, 44/02, 44/08

U.S. Cl. 260—153 15 Claims

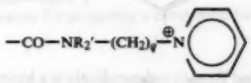
1. A compound of the formula



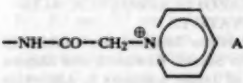
or an acid addition salt thereof,

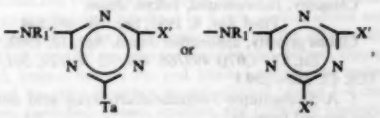
wherein each D′ is independently phenyl subtituted by 1 or 2 Z′ groups; phenyl substituted by 1 or 2 Z′ groups and by 1 or 2 further substituents each of which is independently halo, C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}alkylamino or di-(C_{1-4}alkyl)amino or naphthyl substituted by 1 or 2 $—SO_2—NR_2'—Q—NR_3'R_4'$ groups,

wherein each Z′ is independently $—CO—NR_2'—Q—NR_3'R_4'$, $—CO—NR_2'—(CH_2)_q—N^{\oplus}(CH_3)_3\ A^{\ominus}$,



$—SO_2—NR_2'—Q—NR_3'R_4'$, $—CO—(CH_2)_a—N(C_{1-2}alkyl)_2$, $—CO—CH_2—N^{\oplus}(CH_3)_3\ A^{\ominus}$, $—NH—CO—CH_2—N(C_{1-2}alkyl)_2$, $—NH—CO—CH_2—N^{\oplus}(CH_3)_3\ A^{\ominus}$,





wherein Q is linear or branched C_{2-6}alkylene or $—NH—CO—CH_2—$,

R_1' is hydrogen or methyl,

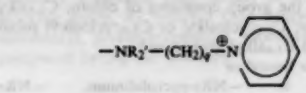
R_2' is hydrogen or methyl,

each of R_3' and R_4' is independently hydrogen, C_{1-6}alkyl, 2- or 3-n-C_{2-3}hydroxyalkyl or benzyl or

$—NR_3'R_4'$ is pyrrolidino, piperidino or morpholino,

Ta is chloro, hydroxy, amino, C_{1-4}alkylamino, di-(C_{1-4}alkyl)amino, C_{2-4}hydroxyalkylamino, di-(C_{2-4}hydroxyalkyl)amino, anilino or morpholino,

each X′ is independently $—NR_2'—Q—NR_3'R_4'$, $—NR_2'—(CH_2)_q—N^{\oplus}(CH_3)_3\ A^{\ominus}$ or



wherein q is 2 or 3, and Q, R_2', R_3' and R_4' are as defined above,

a is 1, 2 or 3, and

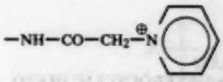
q is 2 or 3, and

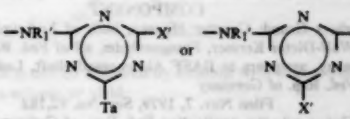
Q, R_2', R_3' and R_4' are as defined above,

each R_{10} is independently hydrogen, C_{1-4}alkyl or C_{1-4}alkoxy,

each R_{11} is independently hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, (C_{1-4}alkyl)carbonylamino, ureido or Zb,

wherein Zb is $—NH—CO—CH_2—N(C_{1-2}alkyl)_2$, $—NH—CO—CH_2—N^{\oplus}(CH_3)_3\ A^{\ominus}$,

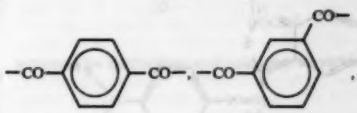


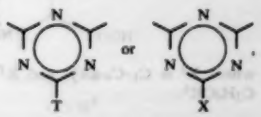


wherein R_1', Ta and X′ are as defined above,

each R_{12} is independently hydrogen or C_{1-4}alkyl, and

Ya is $—CO—$, $—CO—CH=CH—CO—$, $—CO—(CH_2)_q—CO—$,





wherein T is halo; hydroxy; amino; C_{1-4}alkylamino; di-(C_{1-4}alkyl)amino; C_{1-4}alkylamino the alkyl moiety of which is monosubstituted by halo or hydroxy; di-(C_{1-4}alkyl)amino at least one of the alkyl moieties of which is monosubstituted by halo or hydroxy C_{5-6}cycloalkylamino; anilino; substituted anilino having on the phenyl ring 1 or 2 substituents selected from halo, C_{1-4}-alkyl, C_{1-4}alkoxy, hydroxy and phenoxy or morpholino,

X is $—NR_2—Q—NR_3R_4$ or $—NR_2—Q—N^{\oplus}R_5R_6R_7\ A^{\ominus}$,

wherein Q is linear or branched C_{2-6}alkylene or $—NH—CO—CH_2—$,

R_2 is hydrogen or C_{1-4}alkyl,

each of R_3 and R_4 is independently hydrogen; C_{1-6}alkyl; C_{2-6}alkyl monosubstituted in the 2-, 3-, 4-, 5- or 6-position by hydroxy or cyano; phenyl(C_{1-3}alkyl); phenyl(C_{1-3}alkyl) the phenyl ring of which is substituted by 1 to 3 substituents selected from the group consisting of chloro, C_{1-4}alkyl and C_{1-4}alkoxy; C_{5-6}cycloalkyl or C_{5-6}cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups or

$—NR_3R_4$ is pyrrolidino, piperidino or morpholino,

each of R_5 and R_6 is independently C_{1-6}alkyl; C_{2-6}alkyl monosubstituted in the 2-, 3-, 4-, 5- or 6-position by hydroxy or cyano; phenyl(C_{1-3}alkyl); phenyl(C_{1-3}alkyl) the

phenyl ring of which is substituted by 1 to 3 substituents selected from the group consisting of chloro, C_{1-4}alkyl and C_{1-4}alkoxy; C_{5-6}cycloalkyl or C_{5-6}cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups, and

R_7 is C_{1-4}alkyl or benzyl or

$—N^{\oplus}R_5R_6R_7$ is $—NR_7$-pyrrolidinium, $—NR_7$-piperidinium, $—NR_7—$morpholinium, pyridinium, methylpyridinium or dimethylpyridinium,

wherein R_7 is C_{1-4}alkyl or benzyl, and

q is 2 or 3,

wherein each $A^{\ominus}$ is independently a non-chromophoric anion, and

each halo is independently fluoro, chloro or bromo,

with the proviso that the compound may be in acid addition salt form only if it contains at least one non-cationic basic group.

4,465,628

AZO DYES COMPRISING A HETEROCYCLIC DIAZO COMPONENT

Norbert Grund; Guenter Hansen, both of Ludwigshafen, and Wolf-Dieter Kermer, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

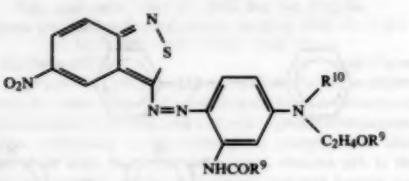
Filed Nov. 7, 1979, Ser. No. 92,182

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2849471

Int. Cl.³ C09B *29/039, 29/045, 29/08;* **D06P** *3/54*

U.S. Cl. 260—158 **5 Claims**

1. A dye of the formula



where R^9 is C_1–C_4-alkyl and R^{10} is C_1–C_4-alkyl, allyl or $C_2H_4OR^9$.

4,465,629

METHOD TO INCREASE COLOR FASTNESS OF STABILIZED ALOE VERA

Rex G. Maughan, P.O. Box 29041, Phoenix, Ariz. 85038

Filed Mar. 17, 1983, Ser. No. 476,419

Int. Cl.³ C07G *17/00;* **A61K** *35/78*

U.S. Cl. 260—236.5 **10 Claims**

1. A process for imparting color fastness to a stabilized aloe vera gel comprising:

(a) heating clear gel which has been separated from the leaf of an aloe vera plant to a temperature in the range of from about 30° C. to about 70° C. for a sufficient period of time to kill bacteria;

(b) adding to said gel an antioxidant in an amount effective to prevent oxidation of said gel;

(c) cooling said aloe vera gel to about 23° C. or lower in less than 15 minutes; and

(d) adjusting the pH of said gel to the range of 3.0 to 3.5.

4,465,630

TETRAAZAANNULENE COBALT COMPLEX COMPOUNDS AND METHOD FOR PREPARATION THEREFOR

Kageyasu Akashi, and Nobuhiko Suga, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

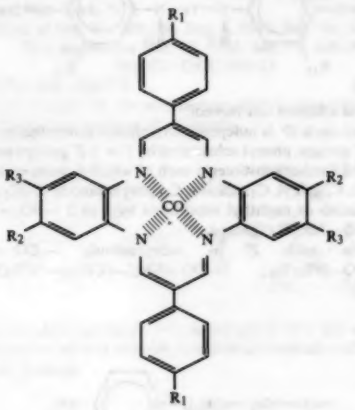
Filed Aug. 20, 1982, Ser. No. 409,919

Claims priority, application Japan, Aug. 24, 1981, 56/132438; Aug. 31, 1981, 56/136312; Aug. 31, 1981, 56/136313; Aug. 31, 1981, 56/136314; Aug. 31, 1981, 56/136315; Jun. 15, 1982, 57/102543; Jun. 16, 1982, 57/103509; Jun. 19, 1982, 57/105678; Jun. 19, 1982, 57/195679

Int. Cl.³ C07F *15/00;* **B01J** *23/62*

U.S. Cl. 260—239 BC **22 Claims**

1. A tetraazaannulene cobalt complex compound having the general formula (I);



(I)

wherein R_1, R_2 and R_3 each independently is a hydrogen atom, a C_{1-8} alkoxy group or a C_{1-8} alkyl group but in case of one of R_1, R_2 and R_3 being a hydrogen atom the other two groups are not hydrogen atoms at the same time, and when R_1 is a methyl group R_2 and R_3 are not hydrogen atoms at the same time.

4,465,631

5-SUBSTITUTED-3-ISOXAZOLECARBOXYLIC ACID DERIVATIVES

Naohiko Yasuda, Yokosuka; Hisao Iwagami, Kawasaki; Eiji Nakanishi, Kawasaki; Yukio Sasaki, Kawasaki, and Shigeru Yamanaka, Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

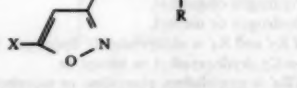
Filed Apr. 6, 1983, Ser. No. 482,544

Claims priority, application Japan, Apr. 12, 1982, 57-59611

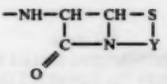
Int. Cl.³ C07D *499/68, 499/70, 501/22, 501/44*

U.S. Cl. 260—239.1 **12 Claims**

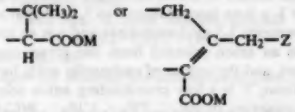
1. A 5-substituted-3-isoxazolecarboxylic acid derivative of the general formula:



wherein X stands for a phenyl group, thienyl group, furyl group or pyridyl group, each of which optionally may carry at least one substituent group; R stands for a phenyl group or hydroxyphenyl group; and A stands for a group of the formula:



wherein Y stands for



in which the carbon atom with which the carboxyl group combines combines with the nitrogen atom in A, M stands for a hydrogen atom or a substituent group, and Z stands for a hydrogen atom, hydroxy group, acyloxy group, carbamoyloxy group, aromatic heterocycle thio group or aromatic nitrogen-containing heterocycle quaternary ammonium group.

4,465,632

PROCESS FOR PREPARING 1-6-AND 2-SUBSTITUTED-1-CARBA-2-PENEM-3-CARBOXYLIC ACIDS

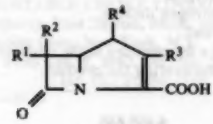
Burton G. Christensen, Cliffside Park, and David H. Shih, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 208,711, Nov. 20, 1980, abandoned, which is a division of Ser. No. 954,271, Oct. 24, 1978, Pat. No. 4,260,627. This application Jul. 15, 1982, Ser. No. 398,729

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/40*

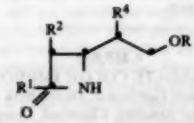
U.S. Cl. 260—245.2 T **2 Claims**

1. A process for preparing a compound having the structure:

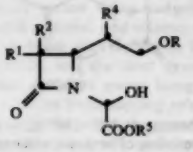


I

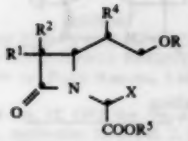
and the pharmaceutically acceptable salts thereof: wherein R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen, and substituted and unsubstituted: alkyl having 1–6 carbon atoms, aralkyl, alkenyl and alkynyl having 2–6 carbon atoms, aryl and aralkyl having 6–10 ring carbon atoms and 1–6 carbon atoms in the alkyl chain, cycloalkyl and cycloalkylalkyl having 3 to 6 ring carbon atoms and 1–6 carbon atoms in the alkyl moiety; wherein the substituents on R^1, R^2, R^3 and R^4 are selected from chloro, bromo, fluoro, hydroxyl, amino, mono-, di- and trialkyl substituted amino (each alkyl having 1–6 carbon atoms) alkoxyl having 1–6 carbon atoms, guanidino, cyano, amidino, and carboxyl; comprising treating a compound of the formula:



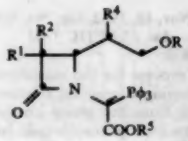
wherein R is a readily removable protecting group selected from acetyl, bromo-t-butoxycarbonyl, benzyloxycarbonyl, formyl, trifluoroacetyl, trimethylsilyl, t-butyldimethylsilyl with a glyoxalate ester wherein the ester moiety is a pharmaceutically acceptable ester moiety or a readily removable blocking group, R^5, selected from benzyl, p-nitrobenzyl, o-nitrobenzyl, pivaloyloxymethyl, bromo-t-butyl to provide a compound having the structure:



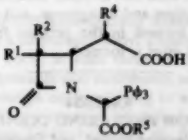
followed by halogenating with a reagent selected from $SOCl_2$, $POCl_3$, oxalyl chloride to provide a compound having the structure;



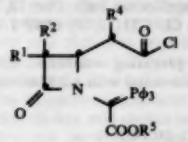
wherein X is chloro followed by treating with triphenylphosphine in a solvent to yield:



followed by deblocking and oxidation to yield:

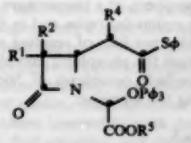


followed by treating with oxalyl chloride to yield:

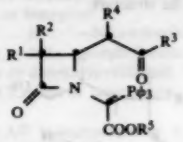


ϕ = phenyl

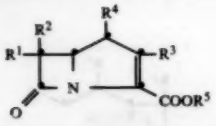
followed by treating with thiophenol to yield:



followed by treating with a Grignard reagent R^3-Mg-halo to obtain



and followed by heating at 100°–160° C. in a solvent selected from the group consisting of benzene, toluene, dioxane, xylene, or dimethylformamide to yield



followed by deblocking.

4,465,633

MANUFACTURE OF ARYL ESTERS

Anil B. Goel, Worthington, and Peter E. Throckmorton, Plain City, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 15, 1982, Ser. No. 441,360
Int. Cl.³ C11C 3/02
U.S. Cl. 260—410.9 R 10 Claims

1. An oxidation process for the manufacture of aryl esters consisting of contacting a reaction mixture of an aromatic compound selected from the group consisting of benzene, naphthalene, anthracene, phenanthrene, biphenyl and terphenyls, a carboxylic acid and molecular oxygen in the liquid phase at a temperature in the range of 100° to 300° C. with a catalyst composed of palladium acetate an antimony acetate and an acetate of at least one member selected from the group consisting of chromium and manganese, and removing continuously the water formed in the process from the reaction mixture as the aryl ester is formed.

4,465,634

PROCESS FOR PREPARING DIENOIC ACIDS

Gian P. Chiusoli; Luciano Pallini, and Giuseppe Salerno, all of Parma, Italy, assignors to Istituto Donegani S.p.A., Novara, Italy

Filed Dec. 23, 1981, Ser. No. 333,934
Claims priority, application Italy, Dec. 23, 1980, 26943 A/80
Int. Cl.³ C11C 1/00; C09F 5/08
U.S. Cl. 260—413 15 Claims

1. A process for preparing octadienoic acids, characterized in that butadiene is reacted with a 3-butenoic acid of formula (I):

$$RR_1C{=}CR_2CR_3HCOOH \quad (I)$$

wherein the symbols: R; R_1; R_2; R_3, either like or unlike one another, represent hydrogen atoms or alkyl groups, containing up to 4 carbon atoms, optionally containing double bonds, under an inert atmosphere, at a temperature of 60° C. to 140° C., in substantially equimolar ratios and in the presence of at least 0.001 millimoles per liter of reacting mass of at least a catalyst selected from the phosphinic complexes of Rhodium (III, IV), the phosphitic complexes of Nickel (V) and the mixture (VI) having the formulae:

$$Rh[P(R_4)_3]_nL_mX \quad (III)$$

$$Rh[P(R_4)_3]_nL^+{}_pY^- \quad (IV)$$

$$Ni[P(OR_5)_3]_4 \quad (V)$$

$$Ni(COD)_2+qp(OR_5)_3 \quad (VI)$$

wherein R_4 is a hydrocarbyl group having up to 15 carbon atoms, L is a linear or cyclic olefin having from 2 to 10 carbon atoms or a chelating olefin having from 6 to 10 carbon atoms; n is an integer from 1 to 3, m is an integer from 0 to 2, such that n+m=2 or 3, p is an integer from 0 to 3, such that n+p=3 or 4; COD represents 1,5 cyclooctadiene and q is an integer from 1 to 4; X is an anion selected from the group consisting of haloid anions, and the anions of carboxylic acids having up to 4 carbon atoms; Y is a low coordinating anion selected from the group consisting of BF_4^-, PF_6^-, ClO_4^-, $B(C_6H_5)_4^-$; R_5 is an aryl or an alkyl having up to 12 carbon atoms.

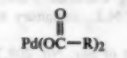
4,465,635

MANUFACTURE OF PALLADOUS CARBOXYLATES

Biau-Hung Chang, and Anil B. Goel, both of Worthington, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 22, 1982, Ser. No. 443,349
Int. Cl.³ C07F 15/00
U.S. Cl. 260—414 10 Claims

1. A method for the preparation of a compound having the composition



wherein R is a hydrocarbon or halogen substituted hydrocarbon group having from 1 to 10 carbon atoms comprising contacting palladium metal with a carboxylic acid having the formula RCOOH wherein R has the foregoing designation in the presence of a member selected from the group consisting of:

HNO_2,

nitric oxide and oxygen,

nitric oxide and nitrogen dioxide,

nitrogen dioxide, and

nitrosyl acetate at a temperature in the range of from 60° C. to 160° C. and recovering the product.

4,465,636

PROCESS FOR THE MANUFACTURE OF ALKYL VANADATES

Alan J. Abramson, and Gershon J. Davis, both of White Plains, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 13, 1982, Ser. No. 416,817
Int. Cl.³ C07F 9/00
U.S. Cl. 260—429 R 14 Claims

1. In a process for the manufacture of alkyl vanadates by the reaction of vanadium pentoxide with an alkyl alcohol in the presence of an azeotroping solvent to assist in the removal of by-product water, wherein the improvement comprises lowering in the vanadium pentoxide to be reacted, prior to the reaction, the amount of vanadium having a valence of lower than +5 in order to achieve an increased yield of alkyl vanadate formed by the reaction.

4,465,637

ALKYL VANADATE COLOR IMPROVEMENT

Alan J. Abramson, and Gershon J. Davis, both of White Plains, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 13, 1982, Ser. No. 416,818
Int. Cl.³ C07F 9/00
U.S. Cl. 260—429 R 7 Claims

1. A process for the color improvement of an alkyl vanadate

which comprises treating the alkyl vanadate with a stream of an oxygen-containing gas to achieve the color improvement.

4,465,638

PROCESS FOR USING SEDIMENTS DEVELOPED DURING STORAGE OF PURE MDI

Peter T. Kan, Plymouth; Robert L. Schaaf, Wyandotte, both of Mich.; Lewis N. Medaugh, Kinnelon, N.J., and William E. Volz, Baton Rouge, La., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 20, 1983, Ser. No. 459,463

Int. Cl.³ C07C *119/048*

U.S. Cl. 260—453 SP **5 Claims**

1. A process for utilizing the sediments of pure MDI which comprises

(a) heating the sediments at temperatures of about 180° C. to about 250° C. for about 0.25 hour to about 6 hours in the presence of crude MDI; and

(b) cooling the product to a temperature of about 60° C. or less within about 5 minutes.

4,465,639

PROCESS FOR POLYISOCYANATES

Richard Hatfield, Jr., Pasadena, Tex., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 26, 1983, Ser. No. 461,247

Int. Cl.³ C07C *118/02, 119/048*

U.S. Cl. 260—453 PH **11 Claims**

1. In a process for the preparation of polymethylene polyphenyl polyisocyanates by phosgenation of the corresponding polyamines in solution in an inert organic solvent followed by removal of excess phosgene and stripping of said solvent the improvement which comprises introducing into the reaction mixture, after completion of the phosgenation but prior to completion of removal of phosgene therefrom, from about 0.1 percent by weight to about 5 percent by weight of water, based on polyisocyanate present in the reaction mixture.

4,465,640

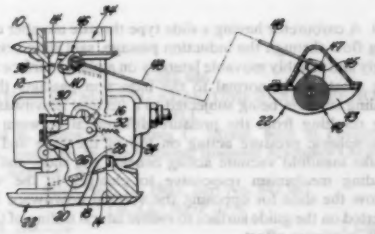
ADJUSTABLE CHOKE LINKAGE MEANS

Michael Dougherty, East Detroit, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,725

Int. Cl.³ F02M *1/10*

U.S. Cl. 261—39 B **13 Claims**



1. The combination of a carburetor, an induction passage formed through said carburetor for supplying motive fluid to an associated engine, a choke valve situated in said induction passage for variably restricting the flow of air into said induction passage, a choke control lever means operatively connected to said choke valve for movement in unison therewith, said choke control lever means comprising a lever member and retainer means carried by said lever member and selectively positionable with respect thereto, said retainer means comprising journalling means, said journalling means assuming differing positions relative to said lever member as said retainer means is selectively positioned to differing positions relative to said lever member, thermostatic choke control means, linkage means having at least first and second ends, said linkage means having said first end operatively connected to said thermostatic choke control means and having said second end operatively connected to said journalling means of said retainer means, said lever member comprising an opening formed therein, said retainer means being comprised of relatively resiliently deflectable material, said retainer means being resiliently deflectable as to by such deflection be operatively received by said opening, and abutment means carried by said retainer means, said abutment means being effective to preclude said retainer means from moving relative to said lever member once said retainer means is operatively received by said opening, once said retainer means is operatively received by said opening said retainer means becomes capable of assuming a differing position relative to said lever member only upon said retainer means first undergoing resilient deflection and withdrawal from said opening.

4,465,641

CARBURETOR FOR SPARK-IGNITION INTERNAL COMBUSTION ENGINES

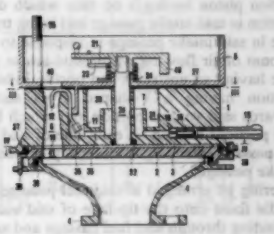
Marco Morini, 108 via, Ponte Romano, 1-10027 Saint-Vincent, Aosta, Italy

Filed Jun. 22, 1982, Ser. No. 390,864

Claims priority, application Italy, Jul. 2, 1981, 67919 A/81

Int. Cl.³ F02M *11/08*

U.S. Cl. 261—41 C **9 Claims**



1. A carburetor for spark-ignition internal combustion engines, comprising a carburetor body, a distributor mounted on one face of said body, at least three chokes traversing said carburetor body towards said distributor, said distributor having holes therethrough corresponding to and in register with each of said chokes, a constant level fuel chamber, for each choke a feeding pipe having two ends, the first end of each said feeding pipe having a nozzle and the second end of each said feeding pipe ending in a nozzle throat area of the corresponding choke, a shutter mounted between said carburetor body and said distributor, said shutter being displaceable in a direction substantially perpendicular to said chokes and being adapted to uncover said chokes in sequence according to a predetermined rule, whereby said shutter rests sealingly against said distributor under the action of the intake depression of a said engine an uncovers distributor holes corresponding to the uncovered chokes, said chokes being parallel to one another, said shutter and distributor being flat and lying in a plane perpendicular to said chokes, said carburetor body having a geometrical center, said chokes being arranged along circle arcs around said center, said shutter being a disc rotating around said center and having arcuate openings therethrough, said chokes being subdivided in two groups, each group of chokes being arranged along a circle arc opposite to the circle arc along which is arranged the other group of chokes, said rotating shutter having two opposite arcuate openings adapted to uncover the chokes alternately from the one group and from the other group of chokes, said carburetor body having two arcuate fuel chambers concentric with and communicating with said central fuel chamber and disposed between said

central fuel chamber and said chokes, said first end of each feeding pipe of the chokes being immersed in one of said arcuate fuel chambers.

4,465,642

VARIABLE VENTURI-TYPE CARBURETOR

Norihiko Nakamura; Takashi Katou; Takaaki Itoh, all of Mishima, and Toshiharu Morino, Mie, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Feb. 23, 1983, Ser. No. 468,875

Claims priority, application Japan, Jul. 16, 1982, 57-122989

Int. Cl.³ F02M 9/06

U.S. Cl. 261—44 C **5 Claims**

1. A variable venturi-type carburetor comprising:

an axially-extending intake passage formed in the carburetor and having an inner wall;

a suction piston having a tip face which defines a venturi portion in said intake passage and being transversely movable in said intake passage in response to a change in the amount of air flowing within said intake passage, said tip face having an upstream end portion which has a central portion having a V-shaped cross section expanding towards said venturi portion and which has flat opposed end portions located on each side of said central portion;

a fuel passage extending transversely and being open to said intake passage;

a metering jet arranged in said fuel passage;

a needle fixed onto the tip face of said suction piston and extending through said fuel passage and said metering jet; and

a raised wall projecting into said intake passage and formed on the inner wall of said intake passage, which inner wall faces the upstream end portion of the tip face of said suction piston, said raised wall having a tip edge which has a flat central portion and opposed end portions arranged on each side of said flat central portion and projecting towards said intake passage relative to said flat central portion, the V-shaped central portion of said suction piston cooperating with the flat central portion of said raised wall and the flat opposed end portions of said suction piston cooperating with the projecting opposed end portions of said raised wall to restrict the flow of air flowing into said venturi portion.

4,465,643

VARIABLE VENTURI CARBURETOR

Yukinori Isoya, Nagoya, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Japan

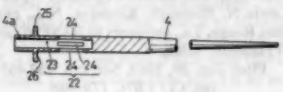
Filed Apr. 6, 1983, Ser. No. 482,652

Claims priority, application Japan, Apr. 22, 1982, 57-60226[U]

Int. Cl.³ F02M 9/06

U.S. Cl. 261—44 C **5 Claims**

1. In combination with a variable venturi carburetor for an internal combustion engine in an automobile having a carburetor body, a float chamber, an air intake passage, a venturi portion provided in said air intake passage, a fuel passage communicating with said float chamber and said venturi portion, a main fuel jet provided in said fuel passage, a suction piston transversely movable with respect to said venturi portion in response to the load conditions of the engine and adapted to be slidably mounted in a cylindrical portion of said carburetor body and a fuel metering needle fixed at its base portion to the end of said suction piston and slidably inserted at its tip portion into said main fuel jet for controlling the opening area of a fuel metering portion of said main fuel jet by reciprocating motion of said suction piston to vary the amount of fuel supplied through said main fuel jet to said air intake passage; the improvement comprising an air passage provided in said suction piston for communicating the inlet of said air intake passage with said end of said suction piston and an air discharge portion provided in said fuel metering needle for communicating said air passage with said venturi portion.



4,465,644

CARBURETOR WITH AN INDUCTOR PASSAGE CONTROLLED BY A THROTTLE SLIDE

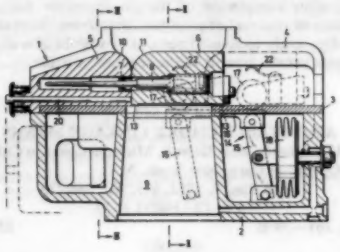
Dieter Stojek, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 26, 1983, Ser. No. 526,833

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232609

Int. Cl.³ F02M 9/06

U.S. Cl. 261—44 B **4 Claims**



1. A carburetor having a slide type throttle member controlling flow through the induction passage, said slide being sealingly and slidably movable laterally on a planar surface extending substantially normal to the induction passage, the slide sealing surfaces being subjected to a vertical downward loading resulting from the pressure differential between a near atmospheric pressure acting on top of the slide and engine intake manifold vacuum acting beneath the slide, and an unloading mechanism responsive to changes in the vacuum below the slide for opposing the vertical downward loading exerted on the guide surface to enable lateral sliding of the slide with minimum effort.

4,465,645

ROTARY SURFACE AERATOR WITH ADJUSTABLE LIQUID TRANSPORTING UNITS

Joseph R. Kaelin, Beckenriedstrasse 58, CH-6374 Buochs, Switzerland

Filed Aug. 13, 1982, Ser. No. 407,928

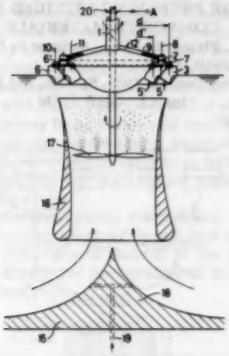
Claims priority, application Switzerland, Aug. 14, 1981, 5244/81

Int. Cl.³ B01F 3/04

U.S. Cl. 261—87 **5 Claims**

1. A rotary surface aeration device for rotating and aerating

sewage in a sewage treatment plant, having a carrying part connected to a vertically running drive axle, the carrying part has a plurality of pairs of liquid transporting units fastened to the part, each liquid transporting unit has at least one scoop and associated current guide wall, the inlet side of the liquid transporting units is below the surface of the sewage during operation and the outlet side of the units is at least primarily above the sewage surface during operation, said device is further characterized wherein each scoop is provided with



scoop outlet edges, the outlet edges of the scoops of a pair of liquid transporting units, and the liquid transporting units themselves are arranged adjacent each other viewed in the circumferential direction and spaced different distances from the drive axle of said device, each pair of liquid transporting units is arranged about a rotatable vertical axle of the carrying part, the pair of units is located on a common pivot bracket having separate pivot brackets for each unit, whereby each unit can be adjusted with respect to the adjacent unit in the pair about the vertical axle of the carrying part of said device.

4,465,646

METHOD OF MAKING ELASTOMER-COATED HOT ROLL

Howard E. Evans, and James C. Minor, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,961
Int. Cl.³ B29F 5/00
U.S. Cl. 264—24 **7 Claims**

1. In a method for molding a cylindrical elastomeric sleeve about a cylindrical, nonmagnetic metal core in order to produce a hot roll for use in a xerographic hot roll fuser, the improvement comprising:

mixing magnetic filler particles with an elastomer;

providing a cylindrical, nonmagnetic metal core;

molding said filled elastomer as a cylindrical fusing sleeve about said core; and

applying a magnetic field to said elastomer as it sets, said field being of a strength to produce a density gradient of filler particles throughout said sleeve, said density being substantially zero at the exterior surface of said sleeve, said density increasing as said core is approached.

4,465,647

METHOD OF MAKING FLAKY β-SIC

Tokuaki Hatta; Haruyuki Ueno; Yuji Katsura; Kazushige Fukuda; Hiroshi Kubota, and Takashi Hamamatu, all of Kitakyushu, Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

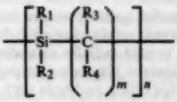
Division of Ser. No. 230,179, Jan. 30, 1981, Pat. No. 4,387,080. This application Jan. 27, 1982, Ser. No. 343,081
Claims priority, application Japan, Jan. 31, 1980, 55-11281
Int. Cl.³ C04B 35/56
U.S. Cl. 264—29.6 **3 Claims**

1. A method of preparation of flaky β-SiC which comprises the following steps:

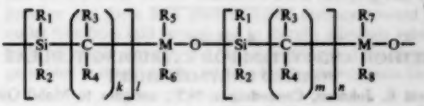
(a) forming a sheet of an average thickness of 10–100μ from an organic silicon polymer containing the carbon and silicon atoms as the major skeletal components, said polymer being selected from at least one of the following unit structures (I)–(IV):

(I)

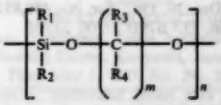
(II)



(III)



(IV)



wherein

R_1 is $-CH_3$ and R_2, R_3 and R_4 are one or more members selected from the group consisting of hydrogen, alkyl, aryl, $(CH_3)_2CH-$, $(C_6H_5)_2SiH$ and $(CH_3)_3Si-$;

k, l, m and n are the respective numbers of repetition of the unit structures defined by the immediately preceding parentheses or brackets and k=1–80, l=15–350, m=1–80, and n=15–350, the average molecular weight of the polymer being in the range of 800–20000;

M is a metallic or nonmetallic element which is Si, B, Ti, Fe, Al, Zr or Cr; and

R_5, R_6, R_7 and R_8 are one or more members selected from the group consisting of hydrogen, alkyl, aryl, $(CH_3)_2CH-$, $(C_6H_5)_2SiH-$ and $(CH_3)_3Si-$ and any one or more of R_5, R_6, R_7 and R_8 may be absent depending on the valence of M and the unit structure,

(b) making said sheet infusible by conventional methods to give an infusible sheet,

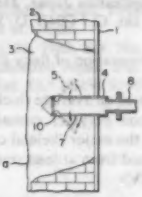
(c) cutting said infusible sheet in a regular or irregular size to provide infusible flaky materials having a width and length of 100 μ to 10 mm, and

(d) heating said flaky materials in an atmosphere of a non-oxidative gas at a temperature of 1200°–1800° C. to give flaky β-SiC.

4,465,648
METHOD FOR REPAIRING REFRACTORY WALL OF FURNACE

Takashi Kiriyama, and Chiyomi Yamaguchi, both of Kamaishi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 401,990
Int. Cl.³ F27D 1/16
U.S. Cl. 264—30 3 Claims



1. A method for repairing the refractory brick lining on the inside of an outer metal wall of a blast furnace by filling a hole worn in the lining with a repair material, which method comprises the steps of:

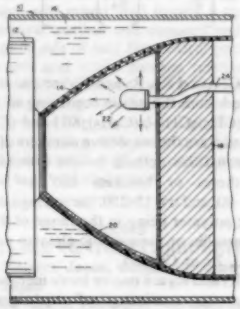
inserting an injection nozzle through the outer metal wall from the outside of the furnace into the hole in said lining, placing a plurality of reinforcing studs in said injection nozzle in a manner for permitting them to spread out from said injection nozzle into substantially radially extending positions; and

injecting repair material under pressure into said injection nozzle and against said reinforcing studs for spreading said reinforcing studs to said radially extending positions, the injecting repair material also being forced from said nozzle into said hole for filling said hole with said reinforcing studs embedded in said thus injected repair material.

4,465,649
METHOD AND SYSTEM FOR EXTRUDING TUBULAR FOAMED POLYMER SHEET

David E. Johnson, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,852
Int. Cl.³ B29D 27/00, 23/04
U.S. Cl. 264—51 21 Claims



1. A method for the production of polymeric foam sheet of uniform dimensions and orientation comprising:

(a) extruding a composition comprising a molten polymer containing a foaming agent therein through an annular die;

(b) passing the extruding tube over a diameter-increasing sizing member spaced from said die;

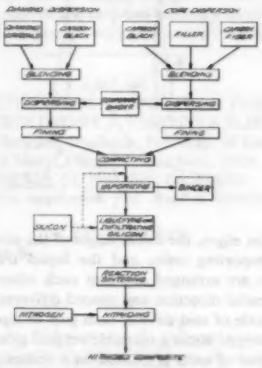
(c) positioning an envelope within said tube between said die and said sizing drum, said envelope having a perforated conical shaped wall conforming to the slope of the extruding tube and spaced closely adjacent thereto, the remainder of said envelope being imperforate, said perforated conical shaped wall extending from adjacent said annular die to adjacent said sizing member; and

(d) maintaining a positive fluid pressure within said envelope so as to cause said tube to ride from said die to over said sizing drum on a uniformly thin layer of fluid maintained by a uniform pressure drop through said perforated wall.

4,465,650
PROCESS FOR PREPARING NITRIDED SUPERHARD COMPOSITE MATERIALS

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Dec. 16, 1981, Ser. No. 331,374
Int. Cl.³ C04B 33/34
U.S. Cl. 264—60 9 Claims



1. A process for preparing a surface nitrided composite comprising:

(a) forming a first dispersion of diamond crystals evenly coated with carbon black in a temporary binder;

(b) forming a second dispersion of carbon fiber, carbon and filler a temporary binder;

(c) compacting said first and second dispersions together to produce an intermediate composite;

(d) placing the intermediate composite in direct contact with silicon and heating said intermediate composite in a furnace in a substantial vacuum in order to remove substantially all of said temporary binder;

(e) allowing liquefied silicon to infiltrate said intermediate composite;

(f) sintering the intermediate composite and infiltrated silicon to thereby produce a β-silicon carbide and elemental silicon binder uniting said intermediate composite; and

(g) subjecting the sintered composite to nitrogen whereby said elemental silicon reacts with said nitrogen to produce Si_3N_4 at the surface of said sintered composite.

4,465,651
APPARATUS AND PROCESS FOR MOLDING A THERMOPLASTIC TUBE HEADPIECE

Louis A. Godschalk, Jr., Radnor, and Nelson J. Bordelean, West Easton, both of Pa., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 279,564, Jul. 1, 1981, abandoned. This application Mar. 29, 1983, Ser. No. 479,947
Int. Cl.³ B29D 23/02
U.S. Cl. 264—161 2 Claims

1. A process for the injection molding of a thermoplastic headpiece adapted to be fused with a preformed tubular body, the headpiece having a neck portion and a shoulder portion,

said neck portion having an imaginary central axis and comprising an inner sidewall and an outer sidewall having screw threads thereon, the said sidewalls being joined by a top wall with a sealing surface, the neck portion forming an orifice which is concentric with respect to said axis;

the process comprising the steps of:

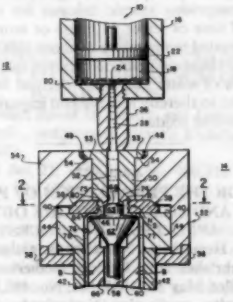
forming a cavity in the shape of said headpiece in a mold unit, said cavity being formed in said mold unit by the mating of a male die member and a female die member, said mold unit having a sprue aligned along said axis and at least partially positioned within said neck portion and at least partially positioned above said top wall to conduct liquid-state thermoplastic material to said cavity;

bringing said male die member to a predetermined position in proximity to said female die member to form said cavity and also, simultaneously, form between them a passageway communicating at one end with said sprue and at the other end with the said inner sidewall of said neck portion; said passageway being within said neck portion;

injecting liquid-state thermoplastic material into said cavity through said sprue and passageway to form said headpiece with a flash-free top wall sealing surface adapted for sealing with a cap;

solidifying the thermoplastic material; and

inserting a severing means within said neck portion; severing the solid thermoplastic material at the passageway and removing the severed passageway and its connected sprue from the headpiece.



2. Apparatus for the injection molding of a thermoplastic headpiece adapted to be fused with a preformed tubular body, the headpiece having a neck portion and a shoulder portion, said neck portion having an imaginary central axis and comprising an inner sidewall and an outer sidewall having screw threads thereon, the said sidewalls being joined by a top wall with a sealing surface, the neck portion forming an orifice which is concentric with respect to said axis;

the apparatus comprising in combination:

a male die member;

a female die member including mold parts for receiving said male die member and defining therewith a cavity having a configuration corresponding to the shape of the headpiece and a sprue which is aligned along said axis and at least partially positioned within said neck portion and at least partially positioned above said top wall with an inlet for receipt of liquid-state thermoplastic material;

at least one passageway located within said neck portion and formed by the bringing together of said male member and said female member and being between them, said passageway being within said neck portion and communicating at one end with said sprue and at the other end with said inner sidewall of said neck portion, said passageway conveying liquid-state thermoplastic material received from said sprue into said cavity;

wherein said headpiece is formed with a flash-free molded top wall adapted to be a sealing surface with a cap; and

severing means inserted within said neck portion to sever the solid-state thermoplastic material of said passageway proximate the junction of said passageway with said inner sidewall.

4,465,652

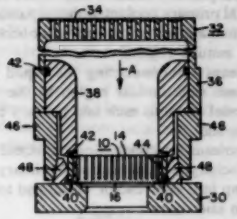
LAMINATED EXTRUSION DIE BLADE SUPPORT

William P. Lentz, Campbell, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 11, 1983, Ser. No. 474,721

Int. Cl.³ B29F *3/00*

U.S. Cl. 264—177 R **12 Claims**



11. A method of supporting a laminated extrusion die, having an inlet face and an outlet face and composed of a plurality of longitudinally-extending die blades stacked together in parallel relationship with said die blades each having opposed end portions with a neutral longitudinal axis extending therethrough, in such a manner so as to eliminate substantially all tensile stress within the laminated die normally generated by extrusion forces which comprises, applying a compressive end force to the opposed end portions of said die blades, directing said force parallel to said neutral axis, and applying said compressive end force at a predetermined distance toward said outlet face from said neutral axis to thereby eliminate substantially all tensile stress in said blades forming said die normally generated in the die blades when subjected to extrusion forces.

4,465,653

NUCLEAR REACTOR

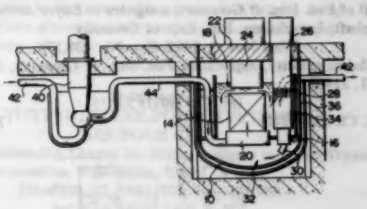
Morihiko Sato, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 1, 1981, Ser. No. 259,686

Claims priority, application Japan, May 6, 1980, 55/59711

Int. Cl.³ G21C *15/00*

U.S. Cl. 376—404 **1 Claim**



1. A nuclear reactor of the type utilizing liquid as primary and secondary coolants, comprising:

a reactor vessel for containing said primary coolant;

a core positioned in the reactor vessel for cooling via said primary coolant;

a plurality of primary liquid metal coolant circulation pumps positioned outside of said reactor vessel separately therefrom and not submerged in said primary coolant;

a plurality of intermediate liquid metal heat exchangers directly detachably mounted to an upper portion of the

reactor vessel and extending into the interior of the reactor vessel for permitting heat exchange between the liquid metal primary coolant and the liquid metal secondary coolant, said intermediate heat exchangers being arranged in a circular configuration within said reactor vessel with the core serving as a center of said configuration and wherein said intermediate heat exchangers are at substantially the same elevational level as the core;

a substantially annular partition wall disposed between the intermediate heat exchangers and an inner wall portion of the reactor vessel defining an annular region containing liquid metal primary coolant and means for allowing the liquid metal primary coolant which is passed through each said intermediate heat exchanger after leaving the core to enter said annular region;

first pipe means for conducting the liquid metal primary coolant from said annular region to the outside of said reactor vessel and into each said primary coolant circulation pump; and

second pipe means for conducting the liquid metal primary coolant discharged from each said primary coolant circulation pump into said reactor vessel and to the bottom of the core in said reactor vessel.

4,465,654

PROCESS FOR USE OF A NOBLE METAL AND RARE EARTH METAL CATALYST

Gerald L. Faschingbauer, Bloomer, Wis., assignor to UOP Inc., Des Plaines, IL

Division of Ser. No. 353,790, Mar. 2, 1982, Pat. No. 4,410,454. This application Aug. 1, 1983, Ser. No. 518,858

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—213.5 **9 Claims**

1. A process for the catalytic oxidation of hydrocarbons or organic molecules having hydrocarbon groups present in noxious fumes which comprises contacting said fumes at oxidation conditions comprising a temperature of from about 500° F. to about 1000° F. with oxygen and a catalyst composition consisting essentially of a platinum group noble metal, a rare earth metal and a metallic support, said platinum group noble metal and said rare earth metal having been electroplated on said metallic support.

4,465,655

PROCESS FOR THE PURIFICATION OF EXHAUST GASES CONTAINING SULFURYL FLUORIDE

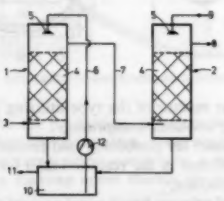
Klaus Geisler, Bonn-Beuel; Hans-Hermann Heins, Leverkusen; Helmut Coulon, Cologne, and Reiner Kriwalski, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1982, Ser. No. 438,178

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1981, 3145012

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—240 **7 Claims**



1. In the process for the removal of sulfuryl fluoride from exhaust gases by reacting sulfuryl fluoride in the exhaust gas with an alkaline material, the improvement comprises reacting said sulfuryl fluoride with a dilute aqueous solution of alkali metal hydroxide or alkali metal carbonate on an active carbon catalyst.

4,465,656

PROCESS FOR PREPARATION OF WATER-FREE OXIDE MATERIAL

Ricardo C. Pastor, Manhattan Beach; Antonio C. Pastor, Santa Monica; Luisa E. Gorre, Oxnard, and Remedios K. Chew, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 294,581, Aug. 19, 1981. This application Apr. 4, 1982, Ser. No. 481,592

Int. Cl.³ C01B *33/18*; C01G *17/02*

U.S. Cl. 423—339 **5 Claims**

1. A process for the preparation of a water-free oxide of silicon or germanium comprising the steps of:

(a) reacting a nonpolar chloride compound containing said silicon or germanium with dimethylsulfoxide to form a precipitate containing said oxide, in a nonaqueous aprotic liquid solvent selected from the group consisting of carbon tetrachloride and dimethylformamide, which provides a water-free environment during the formation of said oxide, to prevent the inclusion of water-derived impurities in said precipitate;

(b) separating said precipitate formed in step "a" from said solvent under water-free conditions; and

(c) exposing said precipitate to a gas phase reactive atmosphere comprising atomic halogen for a predetermined period of time of about 24 hours or more at a predetermined elevated temperature or about 1000° C. or higher to produce a chemical reaction between said atomic halogen and traces of water and water-derived impurities in said precipitate, to thereby remove said impurities and provide said water-free oxide.

4,465,657

PROCESS FOR THE PREPARATION OF PURE SILICON DIOXIDE AND SILICON DIOXIDE OBTAINED BY APPLYING THIS PROCESS

Ruud Spijker, Heemskerk, Netherlands, assignor to Unie van Kunstmestfabrieken B.V., Utrecht, Netherlands

Filed May 11, 1983, Ser. No. 493,592

Claims priority, application Netherlands, May 11, 1982, 8201925

Int. Cl.³ C01B *33/12*

U.S. Cl. 423—339 **10 Claims**

1. A process for preparing purified silicon dioxide in a two step ammonical conversion of hexafluorosilicic acid to silicon dioxide comprising the combination of steps of:

(a) controllably and vigorously admixing a hexafluorosilicic acid solution and an ammonium hydroxide solution to form a reaction mixture and precipitate wherein said ammonium hydroxide solution is about 40 weight percent to 75 weight percent of the ammonium hydroxide stoichiometrically required for converting the hexafluorosilicic acid admixed therewith to ammonium fluoride and silicon dioxide;

(b) separating said precipitate from said reaction mixture to form a substantially precipitate-free reaction liquid;

(c) treating said precipitate-free liquid with ammonium hydroxide to thereby obtain a pure silicon dioxide precipitate; and

(d) recovering said pure silicon dioxide precipitate.

4,465,658

CHLORINE DIOXIDE PROCESS

Maurice C. J. Fredette, Mississauga, Canada, assignor to Erco Industries Limited, Islington, Canada

Filed Jun. 13, 1983, Ser. No. 503,786

Int. Cl.³ C01B *11/02*

U.S. Cl. 423—478 **13 Claims**

1. In a continuous process for the production of chlorine

dioxide by reducing sodium chlorate with methanol in an aqueous acid reaction medium and which exhibits periodic random loss of production, wherein:

aqueous sodium chlorate solution and sulphuric acid are continuously fed to a boiling aqueous acid reaction medium in a reaction zone maintained under a subatmospheric pressure and having a total acid normality of at least 9 normal,

methanol is continuously fed to the reaction medium in sufficient quantity to form chlorine dioxide from the reaction medium,

chlorine dioxide is continuously removed from the reaction zone in gaseous admixture with steam and dissolved in water to form an aqueous solution thereof, and

sodium acid sulphate is continuously deposited from the aqueous reaction medium in the reaction zone,

the improvement wherein chloride ions are also continuously fed to the reaction medium in said reaction zone in an amount at least sufficient to prevent said random periodic loss of production and no more than that which results in chlorine being present in said gaseous admixture in an amount which permits dissolution of the chlorine in the aqueous chlorine dioxide solution.

4,465,659

ALUMINUM PRODUCTION VIA THE CHLORINATION OF PARTIALLY CALCINED ALUMINUM CHLORIDE HEXAHYDRATE

Edward L. Cambridge; Raouf O. Loutfy, and James C. Withers, all of Tucson, Ariz., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 21, 1982, Ser. No. 400,310

Int. Cl.³ C01F 7/60; C25C 3/06

U.S. Cl. 423—495 **29 Claims**

25. A method of producing anhydrous aluminum chloride suitable for electrolytic reduction to aluminum and chlorine comprising heating aluminum chloride hexahydrate crystals to a temperature and for a time sufficient to produce a hydrogen- and chlorine-containing active aluminous material, said hydrogen present in an amount below about 0.45 percent.

4,465,660

SUSTAINED RELEASE TABLET CONTAINING AT LEAST 95 PERCENT THEOPHYLLINE

Stephen T. David; Dana Brooke, and Claude E. Gallian, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation of Ser. No. 249,787, Apr. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 147,429, May 6, 1980, abandoned. This application Dec. 21, 1982, Ser. No. 451,891

Int. Cl.³ A61K 9/20, 9/22, 9/26, 31/52

U.S. Cl. 424—15 **23 Claims**

1. A sustained release pharmaceutical tablet comprising 95% to 99.8% by weight of theophylline, and the remainder conventional pharmaceutical tablet ingredients selected to provide a tablet that remains intact during dissolution, said tablet having a pair of substantially planar opposing faces joined by edge walls and a thickness of from 0.08 to 0.12 inches which when administered to a human in a therapeutically effective amount at consecutive 12 hour intervals affords a continuous blood serum concentration of from 10 mcg/ml to 20 mcg/ml of theophylline during said intervals and wherein said tablet has a bisect score on one of said planar faces and a pair of trisect scores on the opposing planar face.

4,465,661

ORAL PRODUCT HAVING IMPROVED TASTE

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 94,130, Nov. 14, 1979. This application Feb. 16, 1983, Ser. No. 466,733

Int. Cl.³ A61K 9/16, 7/26

U.S. Cl. 424—49 **4 Claims**

1. An aqueous mouthwash free from unpleasant, bitter surfactant taste which is stable, visually clear, and haze free at ambient temperatures consisting essentially of about 60 to about 95 percent by weight of water, about 0.05 to about 3.0 percent by weight of peppermint oil, about 0.1 to about 5.0 percent by weight of a nonionic surfactant consisting essentially of a polyoxyethylene derivative of the fatty alcohol having about 15 to about 20 carbon atoms wherein about 50 to about 90 percent by weight of said nonionic surfactant is derived from ethylene oxide and from about 5 to about 20 percent by weight of ethanol or isopropanol and the weight ratio of said nonionic surfactant to said peppermint oil is greater than 1.5:1.

4,465,662

ORAL COMPOSITIONS OF TRANEXAMIC ACID AND CARVONE

Hiroshi Sato, Tokyo; Haruo Watanabe, Higashikurume, and Nobuo Suganuma, Funabashi, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,221

Claims priority, application Japan, Apr. 8, 1981, 56-45823

Int. Cl.³ A61K 7/16, 7/22, 7/26, 9/68

U.S. Cl. 424—54 **5 Claims**

1. An oral composition for topical use having an effective anti-inflammatory and hemostyptic amount of tranexamic acid, consisting essentially of:

0.01 to 5% by weight of tranexamic acid;

0.1 to 5% by weight of carvone;

0.03 to 10% by weight of l-menthol wherein the weight ratio of carvone and l-menthol is in the range of from 3:7 to 7:3;

5 to 85% by weight of a mixed humectant of sorbitol and glycerine blended at a weight ratio of 1:9 to 6:4;

0.3 to 5% by weight of a binder containing at least 60% by weight of an alkali metal salt of carboxymethyl cellulose; and

not less than 1% and not more than 5% by weight of propylene glycol wherein the oral composition exhibits reduced bitterness due to the tranexamic acid and exhibits good storage stability upon long-term aging said composition avoiding the discoloration upon aging, and undesired scorching taste, imparted by more than 5% by weight of propylene glycol to tranexamic acid containing oral compositions.

4,465,663

POLYOXYBUTYLENE-POLYOXYETHYLENE AQUEOUS GELS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 27, 1981, Ser. No. 287,203

Int. Cl.³ A61K 7/06, 7/135

U.S. Cl. 424—62 **8 Claims**

1. A gel composition which remains a gel at temperatures below room temperature comprising from about 84 percent by weight to about 16 percent by weight of water and from about 16 percent by weight to about 84 percent by weight of a polyoxybutylene-polyoxyethylene block copolymer, all weights based on the weight of the water and the block copolymer wherein said block copolymer is a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms

and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 1200, as determined by hydroxyl number, and the oxyethylene groups present constituting 45 and 85 percent by weight of the mixture, with the provisos that

(a) when the hydrophobe molecular weight is about 1200, then the minimum polyoxyethylene content is about 60 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 25 percent by weight of the gel composition;

(b) when the hydrophobe molecular weight is about 1800, then the minimum polyoxethylene content is about 55 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 20 percent by weight of the gel composition;

(c) when the hydrophobe molecular weight is about 2400, then the minimum polyoxyethylene content is about 50 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the gel composition;

(d) when the hydrophobe molecular weight is about 3000, then the minimum polyoxyethylene content is about 45 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the gel composition.

4,465,664

HAIR SETTING COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura; Sachio Naito, Tokyo, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,288

Claims priority, application Japan, Nov. 20, 1980, 55-163783

Int. Cl.³ A61K *7/09, 7/11, 7/06, 47/00*

U.S. Cl. 424—71 **7 Claims**

1. A hair setting composition comprising as the effective ingredient from 0.01 to 10 wt% of the decomposition product obtained by the oxidation of a keratin material selected from the group consisting of animal hair, human hair, wool fibers, feather, claw, horn and hoof and a basic material selected from the group consisting of 2-amino-2-methyl-1-propanol, 2-amino-2-methyl-1,3-propanediol, 2-amino-2-ethyl-1,3-propanediol, 2-amino-1-butanol, triisopropanolamine, diisopropanolamine, monoisoopropanolamine, triethanolamine, diethanolamine, monoethanolamine, lysine, arginine, histidine and hydroxylysine in an amount of from 0.02 to 0.7 to one part of the effective ingredient, the balance being a polar solvent selected from the group consisting of water, ethyl alcohol and propyl alcohol; said composition being soluble in said polar solvent.

4,465,665

DETOXIFIED *E. COLI* NEUROTOXIN, PREPARATION THEREOF AND IMMUNOLOGICAL PREPARATIONS CONTAINING IT

Lucia Dobrescu, Brussels, Belgium, assignor to Smithkline-Rit, Belgium

Filed Mar. 4, 1982, Ser. No. 354,880

Int. Cl.³ A61K *39/108*; **C07G** *7/00*

U.S. Cl. 424—92 **6 Claims**

1. A detoxified, highly immunogenic *E. coli* neurotoxin consisting in *E. coli* neurotoxin showing a substantial but inferior to 90% inactivation level obtained by bringing *E. coli* neurotoxin into contact with glutaraldehyde.

2. A detoxified *E. coli* neurotoxin according to claim 1 wherein the inactivation level is comprised between 50 and 90%.

4. A vaccine against oedema disease of piglets comprising an effective dose of a detoxified *E. coli* neurotoxin according to claim 1 or 2 adsorbed on an effective amount of an adjuvant selected from the group comprising aluminium hydroxide and aluminium phosphate.

4,465,666

NEW PHARMACEUTICAL PREPARATIONS

Bohumir Lukas, Basel; Walter Wiesendanger, Münchenstein, and Karl H. Schmidt-Ruppin, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 112,593, Jan. 16, 1980, abandoned, which is a continuation of Ser. No. 966,700, Dec. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 915,697, Jun. 15, 1978, abandoned. This application Oct. 30, 1981, Ser. No. 316,585

Claims priority, application Luxembourg, Jun. 17, 1977, 77562

Int. Cl.³ A61K *33/30, 31/70, 31/725, 31/555, 31/315, 31/74*

U.S. Cl. 424—145 **22 Claims**

1. Pharmaceutical preparation for topical administration comprising an anti-viral effective amount of an acid sulfated polysaccharide or acid sulfated polymer selected from the group consisting of heparin, dextran sulfate and polyvinyl sulfate; and zinc ions in the form of a dissociable zinc compound in a weight ratio of acid sulfated polysaccharide or acid sulfated polymer to zinc ions of 1:0.18 to 4.5 together with pharmaceutical adjuvants suitable for topical application.

4,465,667

PROCESS FOR THE PREPARATION OF GASTRIC ACID NEUTRALIZING AGENTS, GASTRIC ACID NEUTRALIZING AGENTS, AND A METHOD FOR TREATING HYPERACIDITY AND DISORDERS RELATED THERETO

Eva K. Byröd, Mölndal, and John A. Sjögren, Mölnlycke, both of Sweden, assignors to Aktiebolaget Hässle, Mölndal, Sweden

Continuation of Ser. No. 160,923, Jun. 19, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,302

Claims priority, application Sweden, Jul. 9, 1979, 7905972

Int. Cl.³ A61K *33/00, 33/10, 33/08*

U.S. Cl. 424—156 **17 Claims**

1. A gastric acid neutralizing suspension comprising (i) a hydrogenated, hydrolyzed glucose polymer in an amount of 2 to 30% by weight, calculated on the suspension, as a suspension stabilizing and suspension forming agent, (ii) dried aluminum hydroxide corresponding to 5 to 20% by weight of Al_2O_3 as an acid neutralizing agent, (iii) water and (iv) optional preserving agents and flavorants.

4,465,668

METHOD FOR IMPROVING INTESTINAL ABSORPTION OF CEPHALOSPORIN DERIVATIVES

Joji Nishikido; Eiji Kodama, both of Fuji, and Mitsuru Shibukawa, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

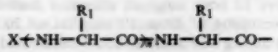
Filed Feb. 24, 1982, Ser. No. 351,613

Claims priority, application Japan, Feb. 27, 1981, 56-26743; Aug. 19, 1981, 56-128688

Int. Cl.³ A61K *37/02*

U.S. Cl. 424—177 **10 Claims**

1. An antibacterial composition having enhanced intestinal absorption comprising a pharmacologically effective amount of an antibacterially active 7-amino-cephalosporanic acid derivative having bonded thereto, at any side chain at the 3-, 4-, or 7-position, a group having the general formula (I)



wherein

X is a hydrogen atom, C_{1-15} alkyl group, R_3CO group wherein R_3 is a hydrogen atom or a straight or branched chain C_{1-15} alkyl group or a protective group easily removable by acid hydrolysis, hydrogenolysis or enzyme existing in a living body;

R_1 and R_2 each independently is a side chain of an amino acid constituting the group having the general formula (I) wherein the amino acid having R_1 or R_2 as the side chain is alanine, isoleucine, leucine, methionine, valine, phenylalanine, tyrosine, phenylglycine, tryptophan, lysine, ornithine, histidine, arginine, serine, threonine, glutamic acid, aspartic acid, cysteine, α-aminoadipic acid, proline, α-amino-n-butyric or glycine; and n is an integer of 1 to 3 and a pharmaceutically acceptable carrier.

4,465,669

ANGIOTROPINS OF LEUKOCYTES AND INFLAMED TISSUE, PROCESS FOR THEIR BIOTECHNICAL PREPARATION, AND PHARMACEUTICAL COMPOSITIONS THEREOF

Josef H. Wissler, and Wolfgang Schaper, both of Bad Nauheim, Fed. Rep. of Germany, assignors to Max-Planck Gesellschaft zur Forderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 357,814

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110560

Int. Cl.³ A61K *37/00*; C12N *5/02*

U.S. Cl. 424—177 **36 Claims**

1. Angiotropins of leukocytes and inflamed tissue, characterized by the following properties:

(a) biological activities in vivo and in vitro:

specific chemotropic action on blood vessels in vivo;

induction of directional growth (chemotropism) of blood vessels along its concentration gradient;

during vessel sprouting, tips of growing vessel capillaries have increased capillary permeability (FIG. 1);

induction of neovascularization of tissues by directional in-growth of blood vessels (FIG. 1 and 2);

(b) physico-chemical properties:

electrophoretic migration in acrylamide matrices at a pH of 7.40 is anodic;

soluble in aqueous media including in 20% ethanol at a pH value of at least 4.0 to 10;

constant temperature coefficient of solubility in ammonium sulfate solutions between −10° C. and +50° C.;

they absorb reversibly in structure and biological activity on anion and cation exchangers, calcium phosphate gel and hydroxyapatite and can be subjected in native form to volume partition chromatography.

9. A process for producing and isolating angiotropins, which comprises:

a. culturing a population of leukocytes in a suitable culture medium;

b. separating the leukocytes from the culture medium after termination of culturing;

c. adding a sufficient amount of a suitable salt to the culture solution to precipitate a first protein fraction from said culture medium;

d. concentrating said salted culture medium to obtain a second protein fraction which is soluble therein; and

e. separately purifying each of said first and second protein fractions by preparative and analytical molecular sieve filtration, anion and cation exchange chromatography, chromatography and hydroxyapatite, zone precipitation chromatography, and recycling or cascade molecular sieve filtration to obtain angiotropins.

4,465,670

METHOD FOR THE TREATMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS AND PRIMARY GLOMERULONEPHRITIS AND AGENT THEREFOR

Tetsuzo Sugisaki, Urawa, and Shinichi Morisue, Tokyo, both of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 23, 1982, Ser. No. 401,144

Int. Cl.³ A61K *37/02, 35/14*

U.S. Cl. 424—177 **7 Claims**

1. A method for the treatment of the diseases lupus erythematosus and primary glomerulonephritis, which consisting essentially of administering an amount of a γ-globulin having Fc fragment to a patient by parenteral route effective to dissolve the immune complexes inducing those diseases.

4,465,671

ANTHRACYCLINE GLYCOSIDES USE AND COMPOSITIONS CONTAINING SAME

Francesco Angelucci; Sergio Penco, both of Milan, and Federico Arcamone, Nerviano, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

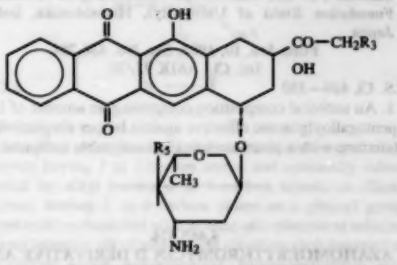
Filed May 26, 1982, Ser. No. 382,144

Claims priority, application United Kingdom, May 28, 1981, 8116264; Aug. 22, 1981, 8125949

Int. Cl.³ A61K *31/71*; C07H *15/24*

U.S. Cl. 424—180 **9 Claims**

1. An anthracycline glycoside of the formula



wherein each of R_3 and R_5 is independently selected from the group consisting of hydrogen and hydroxy, and the pharmaceutically acceptable acid addition salts thereof.

9. A method of inhibiting the growth of P388 leukemia, said method comprising administering to a mammal afflicted therewith, a therapeutically effective amount of a compound according to claim 1.

4,465,672

STABLE S-ADENOSYLMETHIONINE SALTS, THE PROCESS FOR THEIR PREPARATION, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN THEM AS ACTIVE PRINCIPLE

Federico Gennari, Truccazzano, Italy, assignor to Bioresearch S.p.A., Milan, Italy

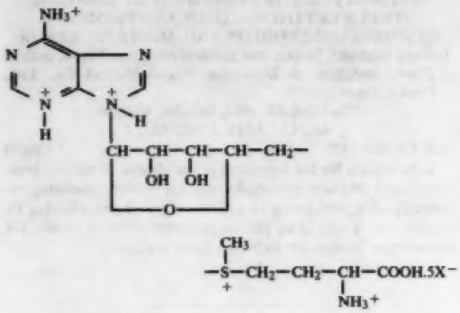
Filed Aug. 16, 1982, Ser. No. 408,683

Claims priority, application Italy, Aug. 24, 1981, 23602 A/81

Int. Cl.³ A61K *31/70*; C07H *19/06*

U.S. Cl. 424—180 **2 Claims**

1. S-adenosylmethionine (SAM) salts of formula:



in which X is the acid equivalent of an organic sulphonic acid of pK less than 2.5.

2. A composition for the treatment of hyperlipemia comprising an anti-hyperlipemic effective amount of the compound of claim 1 and a therapeutically acceptable carrier.

4,465,673

PENTAGALLOYLGLUCOSE ANTIVIRAL COMPOSITION

Yasuo Tanaka, 5-103-6, Midorigaoka, Yao-shi, Osaka-fu, Japan, and Masayuki Takechi, Nara, Japan, assignors to Yasuo Tanaka, Yao and Gakko Jojin Kinki Daigaku (Educational Foundation Kinki of University), Higashiosaka, both of, Japan

Filed Jan. 10, 1983, Ser. No. 456,781
Int. Cl.³ A61K *31/70*
U.S. Cl. 424—180 **5 Claims**

1. An antiviral composition comprising an amount of 1,2,3,4 6-pentagalloylglucose effective against herpes simplex virus in admixture with a pharmaceutically acceptable excipient.

4,465,674

AZAHOMOERYTHROMYCIN D DERIVATIVE AND INTERMEDIATES THEREFOR

Gene M. Bright, Groton, and James R. Hauske, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,828
Int. Cl.³ A61K *31/71*; C07H *17/08*; C12P *19/62*
U.S. Cl. 424—180 **6 Claims**

1. 9-Deoxo-9a-methyl-9a-aza-9a-homoerythromycin D or the pharmaceutically-acceptable salts thereof.

3. A method of treating a bacterial infection in a mammal which comprises administering to said mammal an antibacterially effective amount of the compound of claim 1.

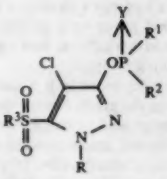
4,465,675

INSECTICIDAL AND FUNGICIDAL 1-ALKYL-5-ALKYLSULFONYL-4-CHLOROPYRAZOLE-3-YL-(THIO)PHOSPHATES AND (THIO)PHOSPHONATES

Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 27, 1982, Ser. No. 453,413
Int. Cl.³ A01N *59/26*; C07F *9/65*
U.S. Cl. 424—200 **27 Claims**

1. A compound of the formula:



wherein R is lower alkyl; R^1 is lower alkoxy or lower alkylthio; R^2 is lower alkyl or lower alkoxy; R^3 is lower alkyl; and Y is sulfur or oxygen.

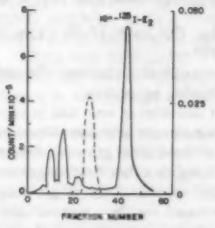
10. A method for controlling fungi which comprises applying to the fungus or its habitat a fungicidally effective amount of the compound of the formula defined in claim 1.

4,465,676

16α HALOGEN SUBSTITUTED 3,17β-DIHYDROXY STEROIDAL ESTROGENS

Richard B. Hochberg, West Englewood, N.J., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Apr. 9, 1980, Ser. No. 138,267
Int. Cl.³ A01N *45/00*
U.S. Cl. 424—238 **18 Claims**



1. A 16α-halo-3,17β-dihydroxy steroidal estrogen wherein the halogen is radioactive.

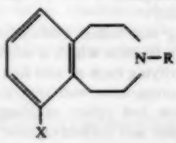
4,465,677

PHARMACEUTICAL COMPOSITIONS AND METHOD OF PRODUCING ALPHA$_2$ ANTAGONISM

Robert M. DeMarinis, Ardmore; Jacob P. Hieble, Philadelphia, and William D. Matthews, West Chester, all of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 14, 1982, Ser. No. 398,015
Int. Cl.³ A61K *31/55*
U.S. Cl. 424—244 **11 Claims**

1. A method of producing alpha$_2$ antagonist activity which comprises administering to a subject requiring said activity an amount sufficient to produce said activity of a benzazepine compound of the formula:



in which:

R is hydrogen or a straight chain lower alkyl of from 1 to 3 carbon atoms, and X is halogen such as chloro or bromo, or a pharmaceutically acceptable acid addition salt thereof.

4,465,678

AMINOPROPIOPHENONE DERIVATIVES AND FUNGICIDAL USE

Hans-Joachim Knops; Wolfgang Krämer, both of Wuppertal, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

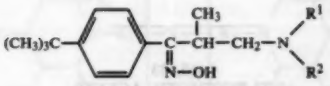
Division of Ser. No. 258,335, Apr. 28, 1981, abandoned. This application Nov. 24, 1982, Ser. No. 444,419

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019497

Int. Cl.³ A01N *43/34, 33/24;* **C07C** *131/00*

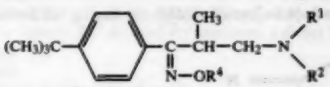
U.S. Cl. 424—244 **4 Claims**

1. An aminopropiophenone derivative of the formula



in which R^1 and R^2 each independently is an alkyl radical, or a physiologically acceptable acid addition salt thereof.

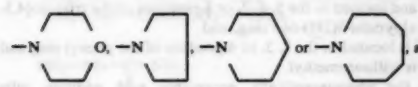
3. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of an aminopropiophenone derivative of the formula



in which

R^1 and R^2 each independently is an alkyl radical, or,

R^1 and R^2, together with the nitrogen atom to which they are bonded, complete an optionally substituted heterocyclic radical of the formula



R^4 is a hydrogen atom or an alkyl, alkenyl, alkinyl or aralkyl radical,

or a physiologically acceptable acid addition salt thereof.

4,465,679

1,2-DIAZA-3-ONE COMPOUNDS, THEIR USE IN TREATING HYPERTENSION AND PHARMACEUTICAL COMPOSITIONS THEREOF

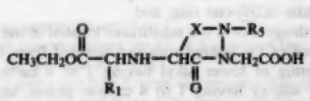
Fu-chih Huang, Boonton, N.J.; Howard Jones, Ossining, and Wan-Kit Chan, Yorktown Heights, both of N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,643

Int. Cl.³ A61K *31/55;* **C07D** *243/02*

U.S. Cl. 424—244 **35 Claims**

3. A compound of the formula:



wherein

X represents a chain of from 1 to 5 unsubstituted methylene groups;

R_1 represents an alkyl group containing 1 to 6 carbon atoms, phenyl, phenylalkyl wherein the alkyl group contains from 1 to 6 carbon atoms, or alkylamine wherein the alkyl group contains from 1 to 6 carbon atoms; and

R_5 represents hydrogen, alkyl containing 1 to 6 carbon atoms, phenyl, or phenylalkyl wherein the alkyl group contains 1 to 6 carbon atoms.

28. An antihypertensive pharmaceutical preparation comprising about 0.1 to about 500 milligrams of a compound according to claim 3 in association with a pharmaceutically-acceptable carrier.

4,465,680

COMBATING FUNGI WITH AZOLYLVINYLDITHIOACETALS

Udo Kraatz; Gerhard Jäger, both of Leverkusen; Karl H. Büchel, Burscheid, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

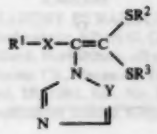
Filed Nov. 1, 1982, Ser. No. 438,061

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145890

Int. Cl.³ A01N *43/50, 43/64;* **C07D** *249/08, 233/60*

U.S. Cl. 424—245 **10 Claims**

1. An azolylvinyldithioacetal of the formula



in which

R^1 is an alkyl group having 1 to 4 carbon atoms, a cycloalkyl group having 3 to 7 carbon atoms and optionally substituted by alkyl having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a phenyl group optionally substituted with at least one substituent selected from halogen, alkyl, alkoxy and alkylthio each having 1 to 4 carbon atoms, halogenoalkyl, halogenoalkylthio each having 1 or 2 carbon atoms and up to 5 identical or different halogen atoms and phenoxy and phenyl optionally substituted by halogen and/or by alkyl having 1 or 2 carbon atoms; and

R^2 and R^3 both are an alkyl group having 1 to 4 carbon atoms; an alkenyl or alkinyl group each having 2 to 6 carbon atoms; a benzyl group optionally substituted on the phenyl ring by at least one of halogen, alkyl, alkoxy and alkylthio each having 1 to 4 carbon atoms, halogenoalkyl, halogenoalkoxy and halogenoalkylthio each having 1 or 2 carbon atoms and up to 5 identical or different halogen atoms, and phenoxy and phenyl optionally substituted by halogen and/or by alkyl having 1 or 2 carbon atoms; or a trialkylsilyl group having 1 to 4 carbon atoms in each alkyl part; or

R^2 and R^3 together form an alkylene chain having 1 to 4 carbon atoms, a dialkylsilyl bridge having 1 to 4 carbon atoms in each alkyl part, or a —CH=CH— group,

X is a keto group or a CH—(OH) group, and

Y is a nitrogen atom or a CH group,

or an addition product thereof with an acid or metal salt.

9. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound according to claim 1.

4,465,681

BIS-(AMINOALKOXY)-PHENYL, PYRIDYL KETONES, AND USE AS IMMUNOLOGICAL AGENTS

Takanori Öe, Nakatsu; Mineo Tsuruda, Shiidamachi; Kazuhiro Goto, and Masao Hisadome, both of Nakatsu, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Japan

PCT No. PCT/JP81/00374, 371 Date Jul. 28, 1982, 102(e) Date Jul. 28, 1982, PCT Pub. No. WO82/02045, PCT Pub. Date Jun. 24, 1982

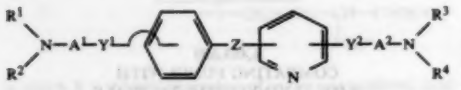
PCT Filed Dec. 9, 1981, Ser. No. 403,664

Claims priority, application Japan, Dec. 10, 1980, 55-175108

Int. Cl.³ A61K *31/44*; C07D *213/64*

U.S. Cl. 424—248.4 **12 Claims**

1. Pyridine derivatives of the formula:



or pharmaceutically acceptable acid addition salts thereof, wherein R^1, R^2, R^3 and R^4 are the same different and each represents hydrogen atom or lower alkyl group, or R^1 and R^2, or R^3 and R^4 together with the adjacent nitrogen atom form a heterocyclic radical selected from the group consisting of pyrrolidino, pipeeridino, 4-methyl-piperazino, 4-hydroxyethyl-piperazino, morpholino, or imidazolyl,- , and A^1 and A^2 are the same or different and each represents alkylene or hydroxy-substituted alkylene group, Y^1 and Y^2 are the same or different and each represents oxygen or sulfur atom, and Z represents

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4,465,682

COMBATING PESTS WITH SUBSTITUTED 3,6-DIPHENYL-3,4-DIHYDRO-2H-1,3,5-OXADIAZINE-2,4-DIONES

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal; Ingeborg Hammann; Ingomar Krehan, both of Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

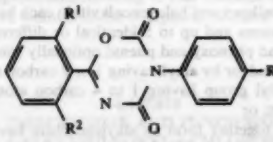
Division of Ser. No. 219,751, Dec. 22, 1980, Pat. No. 4,348,394, which is a continuation of Ser. No. 115,854, Jan. 28, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,300

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905687

Int. Cl.³ A01N *43/88*; C07D *273/04*

U.S. Cl. 424—248.57 **8 Claims**

1. An oxadiazine derivative of the formula



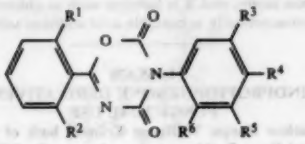
in which

R^1 is halogen or alkyl,

R^2 is hydrogen or halogen, and

R^4 is halogenoalkyl.

6. An arthropodicidal or nematicidal composition containing as active ingredient an arthropodicidally or nematicidally effective amount of an oxadiazine derivative of the formula



in which

R^1 represents halogen or alkyl,

R^2 represents hydrogen or halogen,

R^3, R^5 and R^6 are selected independently of one another and each represent hydrogen, halogen, alkyl or halogenoalkyl and

R^4 represents halogenoalkyl,

in admixture with a solid diluent or carrier or in admixture with a liquid diluent or carrier containing a surface active agent.

4,465,683

ANTI-PSYCHOTIC AGENTS

Duane F. Morrow, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

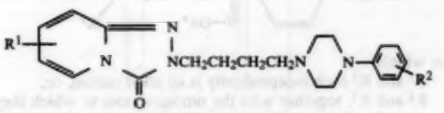
Filed Sep. 14, 1979, Ser. No. 75,580

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ A61K *31/495*; C07D *401/14*

U.S. Cl. 424—250 **5 Claims**

1. A triazolo[4,3-a]pyridin-3(2H)-one having the formula



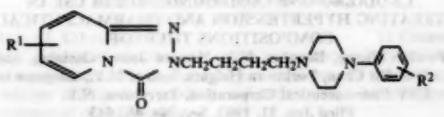
wherein

R^1 is hydrogen or lower alkyl having 1 to 4 carbon atoms and located in the 5, 6, 7, or 8 positions of the triazolo[4,3-a]pyridin-3(2H)-one ring, and

R^2 is located in the 2, 3, or 4 position of the phenyl ring and is trifluoromethyl

and the pharmaceutically acceptable acid addition salts thereof.

5. The process for exerting an anti-psychotic effect which comprises administering orally or parenterally to a psychotic patient a non-toxic anti-psychotically effective dose of a compound having the formula



wherein

R^1 is hydrogen or lower alkyl having 1 to 4 carbon atoms and located in the 5, 6, 7, or 8 positions of the triazolo[4,3-a]pyridin-3(2H)-one ring, and

R^2 is hydrogen, or it is a substituent located in the 2, 3, or 4 position of the phenyl ring and selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halogen, or trifluoromethyl

or a pharmaceutically acceptable acid addition salt thereof.

4,465,684

3,4,5-TRIHYDROXYPIPERIDINE COMPOUNDS AND THEIR USE AS MEDICAMENTS AND IN ANIMAL NUTRITION

Horst Böshagen, Haan; Bodo Junge, Wuppertal; Jürgen Stoltefuss, Haan; Delf Schmidt, Wuppertal; Hans P. Krause, Wuppertal, and Walter Puls, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

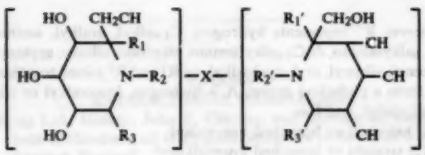
Continuation of Ser. No. 153,286, May 27, 1980, abandoned. This application Nov. 20, 1981, Ser. No. 323,153

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922760

Int. Cl.³ A61K *31/445*; C07D *401/12, 401/14*

U.S. Cl. 424—250 17 Claims

1. A compound of the formula



in which

R_1, R_1', R_3 and R_3' denote a hydrogen atom or a direct bond to X,

R_2 and R_2' denote a hydrogen atom, a C_1 to C_4 alkyl group or a direct bond to X, with the proviso that one and only one of the radicals R_1, R_2 and R_3 and one and only one of the radicals R_1', R_2' and R_3' represent a direct bond to X, and

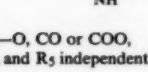
in which

X corresponds to the formula

$$-(A)_m-(R_4)_n-(Y)_p-(R_5)_q-(B)_r-$$

in which

A and B independently denote, CH_2, CH_2—NH, CH_2—NH—CO, CH_2—NHCONH, CH_2—NH-SO_2NH, CH_2—NH—SO_2, CH_2—NHCS—NH, CH_2—NH—COO, CH_2—NHCS,



CH_2—O, CO or COO,

R_4 and R_5 independently correspond to the formula

$$-(R_{13})_s-(U)_t-(R_{14})_v-$$

in which

R_{13} and R_{14} independently denote C_1 to C_{18}-alkylidene, C_2 to C_{18}-alkenylidene with up to three double bonds, C_2 to C_{10} alkenylidene, C_3-C_{10}-cycloalkylidene phenylene, phenylene with one or two substituents from phenoxy, C_1 to C_4 alkyl, F, Cl, or Br or piperazine,

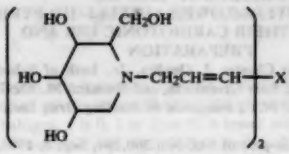
U denotes O, S, SO, SO_2, NH, NR_6, CO, COO, CS, OCOO, NHCOO, CONH, NHCONH, NHCSNH, CH=N, SO_2NH or $NHSO_2$NH,

and

s, t, v, independently are 0 or 1,

Y has the meaning given for U, or has any of the meanings given for R_{13} and R_{14}, and

m, n, p, q and r are 0 or 1, with the proviso that the sum of m and r is 1 or 2 and that p is 0 when n and/or q are 0 and with the proviso that there are excluded the compounds of the formula



wherein X is phenylene.

9. A pharmaceutical composition containing as an active ingredient an effective amount for combating diabetes, hyperlipamia or adiposity, of a compound according to claim 1 in admixture with a solid, liquid or liquefied gaseous diluent.

4,465,685

ANTIINFLAMMATORY PYRAZOLE THIOUREAS

Frederick C. Copp, Beckenham; Albert G. Caldwell, West Wickham, and David Collard, Beckenham, all of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

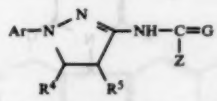
Filed Dec. 15, 1981, Ser. No. 331,011

Claims priority, application United Kingdom, Dec. 23, 1980, 8041151

Int. Cl.³ A61K *31/47*; C07D *401/04*

U.S. Cl. 424—258 21 Claims

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein:

Ar is a monocyclic or bicyclic aromatic radical selected from phenyl, naphthyl, quinolyl, benzyl and pyridyl optionally substituted in any position of the ring by one or more substuent(s) selected from fluoro, chloro, bromo, iodo, nitro, carboxy, hydroxy, amino, monoalkyl substituted-amino, dialkyl substituted-amino, trifluoromethyl, monohalo substituted-alkyl, dihalo substituted-alkyl, trihalo substituted-alkyl, lower alkyl, lower alkoxy, alkylsulphonyl, monohalo substituted-alkyl sulphonyl, dihalo substituted-alkyl sulphonyl and trihalo substituted-alkyl sulphonyl provided that Ar is other than unsubstituted-phenyl;

G is S and Z is NRR^1; and

R, R^1, R^4 and R^5 are each the same or different and are each selected from hydrogen, lower alkyl, and Ar as defined above; and R and R^1 may also be lower alkyl.

13. A method for the prophylaxis or treatment of inflammation in a mammal, including man, comprising the administration to said mammal of a non-toxic, effective anti-inflammatory amount of a compound of formula (I), as defined in any of claims 1 to 6.

4,465,686

5-(HYDROXY- AND/OR AMINO-PHENYL)-6-(LOWER-ALKYL)-2-(1H)-PYRIDINONES, THEIR CARDIOTONIC USE AND PREPARATION

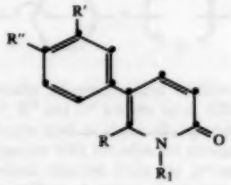
George Y. Lesher; Chester J. Opalka, Jr., both of Schodack; Donald F. Page, East Greenbush, and Ruthann M. McGarry, Schodack, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 300,294, Sep. 8, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 372,174

Int. Cl.[3] **A61K** *31/44;* **C07D** *211/72*

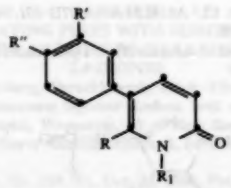
U.S. Cl. 424—263 **19 Claims**

1. A 1-R_1-5-(3-R′-4-R″-phenyl)-6-R-2(1H)-pyridinone having the formula



where R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl, R is lower-alkyl, and, R′ and R″ are each hydrogen or hydroxy, at least one of R′ or R″ being hydroxy, or where R′ is amino or nitro when R″ is hydroxy, or an acid-addition salt thereof where R′ is amino.

8. A cardiotonic composition for increasing cardiac contractility, said composition comprising a pharmaceutically acceptable carrier and, as the active component thereof, a cardiotonically effective amount of 1-R_1-5-(3-R′-4-R″-phenyl)-6-R-2(1H)-pyridinone of the formula



where R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl. R is lower-alkyl, and, R′ and R″ are each hydrogen or hydroxy, at least one of R′ and R″ being hydroxy or where R′ is amino or nitro when R″ is hydroxy, or pharmaceutically acceptable acid-addition salt thereof where R′ is amino.

4,465,687

THIENAMYCIN DERIVATIVES AS ANTI-INFLAMMATORY AGENTS

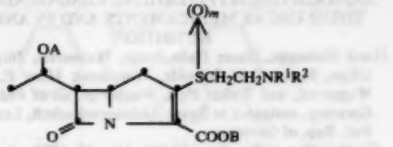
James B. Doherty, New Milford; Morris Zimmerman, Watchung, and Bonnie M. Ashe, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 24, 1982, Ser. No. 381,280

Int. Cl.[3] **A61K** *31/40, 31/695*

U.S. Cl. 424—274 **5 Claims**

1. A method of treating anti-inflammatory conditions comprising the administration to a mammalian species in need of such treatment an effective amount of a compound of formula:



or a non-toxic pharmaceutically acceptable salt thereof; in which m is 0 to 2, R^1 and R^2 independently are hydrogen, C_{1-6}alkyl or an acyl group of the formula

wherein R″ represents hydrogen, C_{1-6}alkyl, aralkyl, amino, C_{1-6}alkylamino, di(C_{1-6}alkyl)amino, alkylthio, alkoxy, aryloxy, alkenyl, alkynyl, aryl, cycloalkyl, or R^1 and R^2 joined together to form a phthaloyl group; A is hydrogen, loweralkyl or trimethylsilyl; and B is

(1) straight or branched loweralkyl;
(2) straight or branched loweralkenyl;
(3) loweralkynyl;
(4) cycloalkyl;
(5) aryl;
(6) aralkyl;
(7) alkanoylalkyl;
(8) alkanoyloxyalkyl;
(9) alkanoyl; or
(10) alkoxyalkyl;

groups (1) to (10) above being unsubstituted or substituted with one or more groups selected from the group consisting of:

(a) halo;
(b) hydroxyl;
(c) alkoxy;
(d) mercapto;
(e) amino;
(f) substituted amino;
(g) nitro;
(h) sulfonyl;
(i) sulfinyl;
(j) sulfamoyl;
(k) alkanoyloxyl;
(l) carbamoyloxyl
(m) carboxy;
(n) alkanoyl;
(o) carboxamido; and
(p) N-substituted carboxamido.

4,465,688

9,10-DIHYDRO-1,8,9-TRIHYDROXY-9,10-ANTHRACENE α,β-ENDOSUCCINIMIDE,α,β-ENDOSUCCINIC ACID AND α,β-ENDOMALEIC ACID AND DERIVATIVE THEREOF

Braham Shroot, Antibes; Jean Maignan, Tremblay les Gonesse, and Gérard Lang, Epinay-sur-Seine, all of France, assignors to Groupement d'Interet Economique Centre International de Recherches Dermatologiques C.I.R.D., Valbonne, France

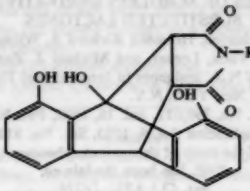
Continuation-in-part of Ser. No. 312,640, Oct. 19, 1981. This application Jun. 29, 1982, Ser. No. 393,647

Claims priority, application France, Oct. 21, 1980, 80 22454

Int. Cl.[3] **C07D** *207/40, 207/404;* **A61K** *31/40*

U.S. Cl. 424—274 **17 Claims**

1. A compound of the formula



wherein R_3 is selected from the group consisting of hydrogen; straight or branched lower alkyl having 1–8 carbon atoms; monohydroxyalkyl having 2–8 carbon atoms, the carbon chain of which may have one oxygen; cycloalkyl having 4–6 carbon atoms; phenyl and benzyl.

4,465,689

ANTIBACTERIAL COMPOUNDS

Kong Luk, Horley; John P. Clayton, and Norman H. Rogers, both of Horsham, all of England, assignors to Beecham Group Limited, England

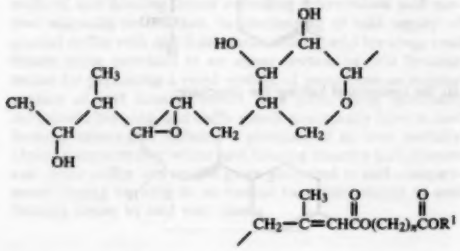
Continuation of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jan. 25, 1979, Ser. No. 115,364

Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 **24 Claims**

1. A pharmaceutical composition for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula:



wherein

R^1 is hydrogen, a salt forming ion or alkyl of 1 to 6 carbon atoms; and

n has a value of 1 to 7,

in combination with a pharmaceutically acceptable carrier.

4,465,690

BROAD SPECTRUM FUNGICIDES

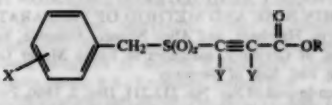
Edward I. Aoyagi, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 26, 1982, Ser. No. 411,758

Int. Cl.³ C07C *149/40, 147/107;* A01N *37/10*

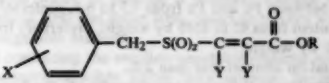
U.S. Cl. 424—308 **33 Claims**

1. A compound of the formula:



wherein X is hydrogen, halogen, lower alkyl, lower alkoxy, nitro, cyano, lower alkylthio, trihalomethyl or amino; Y is halogen; z is 0, 1 or 2; or R is lower alkyl, lower alkenyl or lower alkynyl, optionally substituted with 1 to 3 halogen atoms.

23. A method of controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of the formula:



wherein X is hydrogen, halogen, lower alkyl, lower alkoxy, nitro, cyano, lower alkylthio, trihalomethyl or amino; Y is halogen; z is 0, 1 or 2; and R is lower alkyl, lower alkenyl or lower alkynyl, optionally substituted with 1 to 3 halogen atoms.

4,465,691

(3,4';4,5)-PYRIDO (3,2-G)-FURO COUMARINS OR (3,4-H) PYRIDO PSORALENS PROCESS OF PREPARATION, APPLICATIONS IN COSMETOLOGY AND IN THERAPEUTICS, AND COSMETOLOGICAL AND PHARMACEUTICAL COMPOSITIONS WITH THEM

Emile Bisagni, Orsay; Jacqueline Morin, Gif-Sur-Yvette; Dietrich Averbeck, L'Hay Les Roses, and Dubertret Louis, Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France

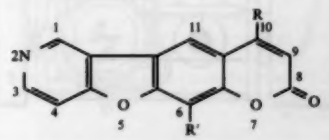
Filed Feb. 24, 1983, Ser. No. 469,454

Claims priority, application France, Feb. 25, 1982, 82 03158

Int. Cl.³ C07D *405/12, 491/153;* A61K *31/435*

U.S. Cl. 424—256 **12 Claims**

1. Pyrido (3,4-h) psoralens or pyrido (3,4';4,5)furo (3,2-g) courmarins having the formula I



wherein R is selected from the group consisting of a hydrogen atom and a lower alkyl group having from 1 to 4 carbon atoms and R' is selected from the group consisting of a methyl group and a methoxy group.

4,465,692

SELECTIVE D-2 DOPAMINE RECEPTOR AGONIST

Alan S. Horn, Noordhorn, Netherlands, assignor to Nelson Research & Development Company, Irvine, Calif.

Filed Jan. 3, 1982, Ser. No. 455,197

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **1 Claim**

1. A method of selectively stimulating D-2 dopamine receptors in humans comprising administering to a human requiring D-2 dopamine receptor stimulation, a therapeutically effective amount of 2-(N-phenylethyl-N-propylamino)-5-hydroxytetralin or a pharmaceutically acceptable salt or ester thereof.

4,465,693

INTRAVENOUSLY ADMINISTERED EMULSION FROM A LECITHIN BASE AND METHOD OF PREPARATION

Kuno Strauss, Hamburg, and Alice Nasner, Aumuhle, both of Fed. Rep. of Germany, assignors to Lucas Meyer GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 212,211, Dec. 2, 1980, Pat. No. 4,357,353. This application Jun. 8, 1982, Ser. No. 386,295

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948607

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ A61K 47/00

U.S. Cl. 424—365 4 Claims

1. A method of intravenous treatment comprising the intravenous administration to a host of an emulsion from lecithin base having the following physico-chemical parameters:

(1) ratio between Pc and Pe from 7:3 to 6:1, preferably 4:1,

(2) Pc content from 65 to 85% by weight, preferably from 75 to 80% by weight,

(3) residual fat content less than 2%,

(4) pyrogen-free in the rabbit test according to the European Pharmacopoeia (1975), vol. 2, page 56 et seq.,

(5) clearly soluble in ethanol at 5% concentration,

(6) clearly soluble in chloroform at 10% concentration,

(7) maximum water content 2.5%, preferred maximum 1%,

(8) maximum peroxide number 5, preferred maximum 1 (determined according to the DGF standard method F-1 3b (68).

2. Method of providing lecithin intravenously into the human body comprising the steps of:

(a) preparing a distilled water lecithin dispersion by treating a phospholipid mixture which contains phosphatidylcholine (Pc) and phosphatidylethanolamine (Pe) dissolved in alcohol with sufficient water to cause the partial precipitation of undissolved components of the phospholipid mixture;

(b) heating glycerine and refined soya oil separately;

(c) adding the heated glycerine to the lecithin water dispersion;

(d) adding the soya oil by intense stirring;

(e) homogenizing the resulting mixture;

(f) decanting the emulsion;

(g) and then sterilizing and administering intravenously.

4,465,694

DIPEPTIDE SWEETENING COMPOSITION

Yuzo Okada, Kamakura, Japan, assignor to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,268

Claims priority, application Japan, Dec. 10, 1980, 55-174176; Aug. 20, 1981, 56-130621

Int. Cl.³ A23L 1/236

U.S. Cl. 426—3 9 Claims

1. A dipeptide sweetening composition, comprising:

(a) from 20 to 60% by wt. of a solid ingredient selected from the group consisting of higher fatty acids, hardened fatty acids, higher alcohols, beef tallows, edible solid fats, hardened oil, waxes and resins,

(b) from 10 to 30 by wt. of emulsifier,

(c) from 10 to 30% by wt. of polysaccharide and

(d) not more than 30% by wt. dipeptide sweetener, all of said percentages being based on the weight of the composition.

4,465,695

MIXTURES OF ACROLEIN DERIVATIVES AND SUBSTITUTED LACTONES

Braja D. Mookherjee, Holmdel; Richard A. Wilson, Westfield; Manfred H. Vock, Locust, and Michael J. Zampino, North Bergen, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

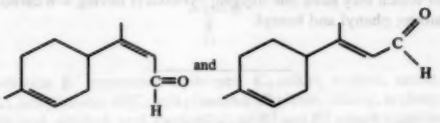
Division of Ser. No. 399,012, Jul. 16, 1982, Pat. No. 4,416,902. This application Jul. 8, 1983, Ser. No. 511,918

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

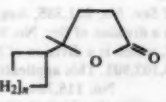
Int. Cl.³ A23L 1/226

U.S. Cl. 426—3 7 Claims

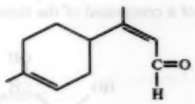
1. A flavoring mixture of limonene carboxaldehydes defined according to the structures:



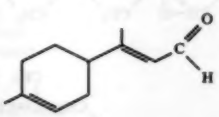
and a gamma-methyl-gamma-cycloalkyl butyrolactone defined according to the structure:



wherein n is 2 or 3, the mole ratio of gamma methyl gamma cycloalkyl butyrolactone mixture varying from 1.99 up to 99:1 and the ratio of the compound having the structure:



to the compound having the structure:



being in the range of from 50:50 down to 1:40.

4,465,696

HIGH PROTEIN SPROUTED MUNG BEAN FOOD MIX AND METHOD OF PREPARATION

David M. Strahl, Plainfield, Ind., assignor to King Sprout Products, Inc., Indianapolis, Ind.

Filed Jan. 3, 1983, Ser. No. 455,018

Int. Cl.³ A23L 1/20

U.S. Cl. 426—63 8 Claims

1. A method of forming mung bean sprouts for a dry food mix comprising the steps of:

growing mung bean sprouts in darkness under a moist sheet;

harvesting said sprouts prior to attainment of a height of six inches;

removing the seed coat associated with said sprouts including directing high liquid pressure against said seed coat;

coating said sprouts with a wet solution including predomi-

nantly water, said coating effective to improve binding properties and reduce bitter taste of said sprouts;

dehydrating the coated sprouts to a moisture content less than ten percent;

grinding the dehydrated sprouts; and,

mixing the ground sprouts with a dry food mix.

4,465,697

COFFEE BREWING APPARATUS AND METHOD

Michael F. Brice, Syosset, and Gaetano A. Natoli, Suffolk, both of N.Y., assignors to Brice Ilotan Research Corporation, Ronkonkoma, N.Y.

Filed Jun. 14, 1983, Ser. No. 504,155

Int. Cl.³ A23F *5/26*; B65B *29/02*

U.S. Cl. 426—79 **21 Claims**

1. A coffee brewing device for rapidly brewing coffee, said device comprising housing means containing a supply of ground coffee, said housing means being at least partially submersible in a liquid means to effect said brewing of said coffee, self-supporting elongated handle means dimensioned to be hand held and attached to said housing means for facilitating positioning and stirring of said housing means in said liquid means, said housing means having opposed relatively narrow, self-supporting sidewalls with opposed relatively wide porous walls of said housing means extending intermediate said narrow sidewalls to facilitate an intermixing of said supply of ground coffee with said liquid means during said brewing, vent means being provided in an upper portion of said housing means for permitting a rapid venting of gases from an interior portion of said housing means, said gases being generated during said brewing, and baffle means structurally fixed to said housing means and defining a plurality of at least partially closed compartments within said housing means which contain and retain coffee and enable gases generated in said compartments during brewing to be vented from the interior of said housing means by said vent means.

4,465,698

SYRUP FOR CANDYING, MEANS FOR ITS PREPARATION, ITS USE AND PRODUCTS SO-OBTAINED

Guy Bussiere, La Gorgue, and Michel Huchette, Merville, both of France, assignors to Roquette Freres, France

Filed May 3, 1982, Ser. No. 374,142

Claims priority, application France, May 4, 1981, 81 08764

Int. Cl.³ A23G *3/00*; A24L *1/212*; A23L *1/09*

U.S. Cl. 426—102 **8 Claims**

1. Syrup for candying having the following composition:

$0 \leq$ total fructose content	$< 17.5\%$
$1 <$ dextrose content	$< 35\%$
$25 <$ maltose content	$< 75\%$
$0 \leq$ content of products of DP $> 20 <$	2%,

the complement to 100% being constituted by saccharides of DP ranging from 3 to 20.

4,465,699

DECAFFEINATION PROCESS

Fulvio A. Pagliaro, Marysville; James G. Franklin, Union County, both of Ohio, and Rupert J. Gasser, Zumikon, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 605,717, Aug. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 527,870, Nov. 27, 1974, abandoned. This application Nov. 16, 1976, Ser. No. 742,094

Int. Cl.³ A23F *3/36, 5/20*

U.S. Cl. 426—428 **12 Claims**

1. A process for producing decaffeinated solid vegetable material suitable for use in preparation of beverages, which comprises:

(a) swelling a caffeine-containing solid vegetable material with water to provide a moisture content of between about 20% and about 60%, based on the dry weight of the vegetable material;

(b) contacting the swollen vegetable material with a liquid, water-immiscible edible fatty material having incorporated therein an amount of water sufficient to maintain an aqueous equilibrium between the vegetable material and the fatty material and maintaining such contact to transfer caffeine from the coffee to the fatty material;

(c) separating the vegetable material from the caffeine-laden fatty material; and

(d) repeating steps (b) and (c) while maintaining the moisture content of the vegetable material above about 20% until at least about 92% of the caffeine has been removed from the vegetable material.

4,465,700

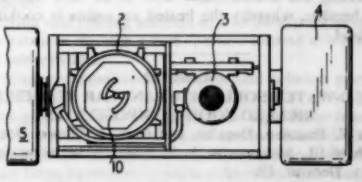
DOUGH MIXING FOR FARINACEOUS FOODSTUFF PRODUCTION

Kenneth M. J. Ball, Merseyside, England, assignor to Tweedy of Burnley Limited, Burnley, England

Filed Apr. 21, 1983, Ser. No. 487,303

Int. Cl.³ A21D *13/08*

U.S. Cl. 426—504 **16 Claims**

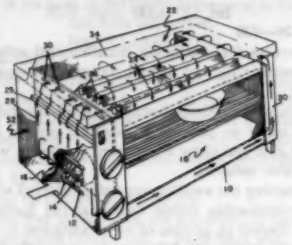


1. A method of mixing dough for use in the production of bread having a specific volume of about 4.5 to 7.0 cubic centimeters per gramme, the dough comprising at least the ingredients flour, salt, yeast, sugar, conditioners and water, and wherein energy added during mixing is sufficient to substantially determine the cell structure of the finished product, the dough, not being a sponge, requiring substantially no fermentation in bulk, comprising the steps of: mechanically mixing the dough in a batch; imparting energy to the dough by said mixing step in a quantity in excess of 10 watt hours per kilogramme of total dough ingredients; controlling the temperature rise in the dough resulting from energy input during said mixing step, by passing a fluid coolant through a jacket surrounding the mixing chamber so that the temperature of the dough after mixing is within the range of 25° C. to 35° C.; adding at least some of the water required to make the dough part way through the mixing process; and carrying out at least part of the mixing under vacuum conditions.

4,465,701
METHOD OF CONVECTION COOKING OF FOOD

J. Harrison Holman, P.O. Box 529A, Kennebunkport, Me. 04046, and Jay C. Holman, 40 Montrose Ave., Portland, Me. 04103

Division of Ser. No. 233,912, Feb. 12, 1981, Pat. No. 4,386,558. This application May 26, 1983, Ser. No. 498,528
Int. Cl.³ A23L 1/00
U.S. Cl. 426—523 1 Claim



1. A method of convection cooking of food, comprising the steps of:

forming a food cooking unit having an outer casing with air intake vent means, an inner cooking chamber with air entry aperture means, a channel between said inner cooking chamber and a corresponding portion of said outer casing, and a heat source inside said inner cooking chamber;

introducing food into said cooking chamber;

supplying heat to said heat source;

forcing air through said outer casing air intake vent means into and through said channel means over said heat source and into said cooking chamber to cook said food, and diverting a small flow of said air through the air entry aperture means in said inner chamber to cool a portion of the top of the channel to avoid hot spots therein, thereby heating said small flow of air by contact with the heated cooking chamber; and

directing the heated small flow of air into said cooking chamber, whereby the heated air assists in cooking said food.

4,465,702
COLD-WATER-SOLUBLE GRANULAR STARCH FOR GELLED FOOD COMPOSITIONS

James E. Eastman, Decatur, and Carl O. Moore, Rochester, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 1, 1982, Ser. No. 438,088
Int. Cl.³ A23L 1/195, 1/187
U.S. Cl. 426—578 29 Claims

1. An improved cold-water-swelling granular starch material derived from ungelatinized corn starch consisting essentially of substantially intact, partially swollen granules which appear nonbirefringent when viewed under a polarizing microscope and which have a cold-water-solubility of at least 50% and a reduced native fat content of about 0.25% or less.

4,465,703
HARD BUTTER AND PROCESS FOR MAKING SAME

James J. Jasko, and Susan M. Domek, both of Middleburg Heights, Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 289,362, Jul. 31, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 399,715
Int. Cl.³ A23D 5/00
U.S. Cl. 426—607 5 Claims

1. A cocoa butter equivalent hard butter comprising a blend of

(a) a fractionated crude or refined sal fat having an IV of about 29–36 and a Mettler Dropping Point of about 36°–39° C. and consisting essentially of triglycerides of fatty acids in the following approximate proportions:

Fatty Acid	Approximate Percentages
Palmitic	5–8
Stearic	45–52
Oleic	30–40
Linoleic	less than 1.5
Arachidic	4–10

with at least about 89% of the oleic acid being in the 2-position of the triglycerides; and

(b) a mid-fraction of palm oil having an IV of about 30–44 and a Mettler Dropping Point of about 33°–38° C. and consisting essentially of triglycerides of fatty acids in the following approximate proportions:

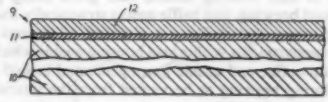
Fatty Acid	Approximate Percentages
Palmitic	51–58
Stearic	5–8
Oleic	30–36

with at least about 71% of the oleic acid being in the 2-position of the triglycerides, said proportion of sal fat fraction to palm oil mid-fraction being about 60:40 to 25:75.

4,465,704
HEAT-SINK IMAGING METHOD AND APPARATUS FOR RECORDING SURFACE TOPOLOGY

Mark H. McCormick-Goodhart, Grosse Pointe Woods; Vincent D. Cannella, Detroit, and Robert Minko, East Detroit, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 896,601, Apr. 14, 1978, abandoned. This application Aug. 21, 1978, Ser. No. 937,432
Int. Cl.² A61B 5/10
U.S. Cl. 430—292 13 Claims



1. A method of recording the surface topology of a given surface comprising the steps of: providing a recording film including an electromagnetic imaging energy transparent substrate upon only one side of which is deposited a thin, solid, high optical density body of a dispersion imaging material which, upon application of said imaging energy thereto for a given momentary period in an amount which in the absence of any heat dissipating surface contiguous to said side of the recording film produces heat in the imaging material of a certain critical value, is changed to a fluid state in which the surface tension of the imaging material acts to cause the substantially opaque film to disperse and change to a discontinuous film comprising light-passing openings and deformed material which are frozen in place after termination of said energy; applying said surface whose surface topology is to be recorded against the side of the recording flim upon which said imaging material is deposited so that projecting portions of the surface of the object act as effective heat sinks at the points where it is most contiguous thereto to dissipate heat thereat to an extent where said imaging material is not imaged appreciably, if at all, by said amount of energy, and wherein the heat sinking effect of said surface where certain recessed portions thereof are

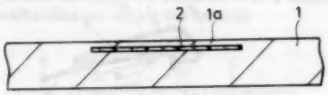
located in so minimal as not to prevent the appreciable dispersion of said imaging material; and then applying through the electromagnetic energy transparent substrate side of the recording film said electromagnetic imaging energy where substantially no heat is developed thereby in said substrate for said given momentary period and only while said surface remains in contact with said film and in said amount sufficient to produce heat in the unheat-sinked regions of the material above said certain critical value to disperse and change the same to said discontinuous body of imaging material where said certain recessed portions of said surfce confront the recording film.

4,465,705

METHOD OF MAKING SEMICONDUCTOR DEVICES

Takeshi Ishihara, Neyagawa, and Keiichi Kagawa, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 264,206, May 15, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,142
Claims priority, application Japan, May 19, 1980, 55-66777; Sep. 19, 1980, 55-130935; Dec. 17, 1980, 55-179443
Int. Cl.³ H01L *21/76*
U.S. Cl. 427—38 2 Claims



1. A method of making a semiconductor device comprising the successive steps of:

(1) forming an anti-oxidation film pattern within a semiconductor substrate by ion implantation with a thin region of the semiconductor substrate remaining intact above the anti-oxidation film pattern so formed;

(2) oxidizing the entire surface of the semiconductor substrate including the semiconductor layer on said anti-oxidation film pattern using the thus-formed anti-oxidation film pattern as a selective oxidation mask thereby leaving a resion of said substrate which is under said anti-oxidation film pattern unoxidized while protecting at least the brim portions of the anti-oxidation film pattern from exposure to the oxidizing atmosphere while producing a silicon dioxide coating adapted for use as a field oxide, and continuing the oxidation until the resultant oxidized regions adjacent and around the anti-oxidation film pattern, except those regions directly above it, have bottom faces deeper than the bottom face of said anti-oxidation film pattern in the semiconductor substrate while substantially suppressing irregular oxidation about the edges of the anti-oxidation film pattern;

(3) removing said oxidized surface regions overlying said anti-oxidation film while only partially removing said oxidized regions formed directly on said semiconductor substrate thereby exposing the entire surface of said anti-oxidation film pattern; and thereafter

(4) removing said anti-oxidation film.

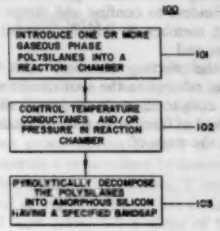
4,465,706

BANDGAP CONTROL IN AMORPHOUS SEMICONDUCTORS

Vikram L. Dalal, and M. Akhtar, both of Lawrenceville, N.J., assignors to Chronar Corporation, Princeton, N.J.

Filed Nov. 20, 1981, Ser. No. 323,585
Int. Cl.³ H01L *21/205*
U.S. Cl. 427—86 10 Claims

1. The method of producing amorphous semiconductor hydrides with specified bandgaps, which comprises controllling the temperature and partial pressure of higher


100
INTRODUCE ONE OR MORE GASEOUS PHASE POLYSILANES INTO A REACTION CHAMBER
101
CONTROL TEMPERATURE CONDUCTANES AND/OR PRESSURE IN REACTION CHAMBER
102
PYROLYTICALLY DECOMPOSE THE POLYSILANES INTO AMORPHOUS SILICON HAVING A SPECIFIED BANDGAP
103

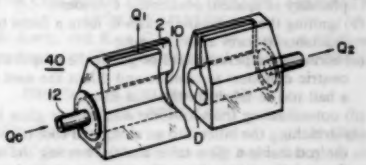
order semiconductanes which are created pyrolytically on a substrate.

4,465,707

COATING METHOD

Yasuhinori Tanaka, and Hiroshi Chikamasa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 17, 1981, Ser. No. 274,704
Claims priority, application Japan, Jul. 8, 1980, 55-92282
Int. Cl.³ H01F *10/00*
U.S. Cl. 427—128 8 Claims



1. A method for supplying a coating solution onto a surface of a continuously-run flexible belt-shaped support by discharging said coating solution through an end portion of a longitudinal slit which confronts a surface of said support, comprising the steps of:

supplying said coating solution to a solution pool formed in an extruder through a first aperture located in a first side of said extruder;

providing communication between said solution pool and said slit;

discharging a part of said supplied coating solution from said solution pool through a second aperture located in a second opposite side of said extruder, said first and second sides being located at opposite sides of said extruder along a lengthwise direction of said longitudinal slit; and

discharging a remainder of said supplied coating solution through said end portion of said slit, a rate at which said solution is supplied into said pool being greater than a rate at which said solution flows through said slit.

4,465,708

TECHNIQUE FOR FABRICATING SINGLE MODE LIGHTGUIDE SOOT-FORMS

Ronald E. Fanucci, Hamilton Township, Mercer County, and Maria J. Yuen, Rocky Hill Township, Somerset County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 31, 1983, Ser. No. 499,713
Int. Cl.³ B05D *1/08*
U.S. Cl. 427—163 6 Claims

1. A method of forming a core of a single mode lightguide soot-form, comprising the steps of:

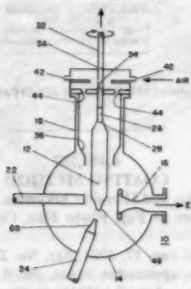
directing combustible gases and reactants through a plurality of spaced, concentric cylinders;

igniting the combustible gases to form a flame to heat the reactants to form a soot stream;

forming a tapered shield of gas at the output of the concentric cylinders to confine and direct the soot stream at a starting member to initially deposit the soot-form core thereon; and

moving the starting member, with the soot-form core thereon, relative to the soot stream while depositing soot on the core to increase the length thereof.

6. A method of fabricating a single mode lightguide preform, comprising the steps of:



(a) directing combustible gases and reactants through a plurality of spaced, concentric cylinders;

(b) igniting the combustible gases to form a flame to heat the reactants to form a soot stream;

(c) forming a tapered shield of gas at the output of the concentric cylinders to confine and direct the soot stream as a bait rod to fabricate the soot-form;

(d) consolidating the soot-form into a clear glass billet;

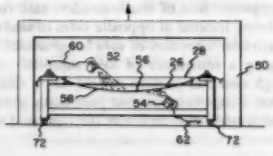
(e) stretching the billet into an elongated rod; (f) positioning the rod inside a glass tube; and (g) heating the tube, with the rod therein, to form the single mode lightguide preform.

4,465,709

METHOD OF PROCESSING TIRE CORD FABRIC

Robert K. Rossi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 18, 1982, Ser. No. 389,681
Int. Cl.³ B05D 1/02
U.S. Cl. 427—209 **9 Claims**



1. A method of processing tire cord fabric for reinforcing a tire of cast polyurethane with said fabric having loosely woven warp cords made from twisted strands of a high strength material and relatively thin pick cords of a low strength material, said warp cords having interstices and being connected by said pick cords at spaced-apart intervals defining spaces in said fabric between said warp cords and said pick cords comprising:

(a) supporting a section of said tire cord fabric;

(b) adjusting said section of said fabric on said support so that said warp cords are evenly distributed in the longitudinal direction across the width of said fabric;

(c) wetting said fabric in a supported condition on both sides with a dilute reactive polyurethane solution to provide coated cords for chemical bonding to said cast polyurethane with said spaces open and said interstices essentially preserved for mechanical bonding with said cast polyurethane of said tire;

(d) moving said fabric into an enclosed oven while continuing to support said section of said tire fabric and heating the wetted fabric at a predetermined temperature for a predetermined time to evaporate the solvent and cause the polyurethane mixture to be at least partially cured and bond said warp cords to said pick cords; and

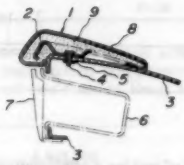
(e) cooling said fabric.

4,465,710

PROCESS FOR THE MANUFACTURE OF POLYURETHANE-COATED PRODUCTS

Toshihiko Uchiyama, Yokohama; Eizō Yoshida, Chigasaki, and Toshiki Okuyama, Naka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 122,768, Feb. 19, 1980, abandoned.
This application Sep. 2, 1981, Ser. No. 298,624
Claims priority, application Japan, Feb. 20, 1979, 54-18705
Int. Cl.³ B05D 3/00, 3/12
U.S. Cl. 264—46.5 **20 Claims**



1. A process for manufacturing a press-formed metallic article having a layer of a polyurethane resin, comprising the steps of:

providing a core-member comprising a metallic sheet, said sheet having a thin coating of a rust-preventing oil or being free from such a coating;

applying to said core-member a thin layer of a lubricant composition comprising a compound having an oxygen-hydrogen bond;

press-forming said lubricated core-member into a desired shape;

without degreasing the surface of said press-formed core-member to remove said lubricant composition, applying to the surface of said core-member a polyurethane-forming composition consisting essentially of a polyol and an isocyanate;

reacting said polyol and said isocyanate to produce a layer of polyurethane resin on the surface of said press-formed core-member; and

reacting said compound having an oxygen-hydrogen bond with said isocyanate to produce a urethane bond, whereby adhesion between the polyurethane resin layer and the core-member is enhanced.

16. A process for manufacturing a press-formed metallic article having a layer of a polyurethane resin, comprising the steps of:

applying to a core member comprising a metallic sheet a thin layer of a lubricant composition comprising 20 parts of 80/20 acrylic acid/methacrylic acid polymer, 3 parts of styrene-maleic anhydride copolymer, 0.5 part of calcium stearate, 0.5 part of zinc stearate and the balance up to 100 parts of methylene chloride;

press-forming said lubricated core member into a desired shape;

without degreasing the surface of said press-formed core member to remove said lubricant composition, applying to the surface of said core member a polyurethane-forming

composition consisting essentially of a polyol and an isocyanate; and

reacting said polyol and said isocyanate to produce a layer of polyurethane resin on the surface of said press-formed core member and at the same time reacting said lubricant composition with said isocyanate to produce a urethane bond, whereby adhesion between the polyurethane resin layer and the core-member is enhanced.

4,465,711

HEAT-RESISTING LAYER-CONSTRUCTIONS AND METHOD FOR PREPARING THE SAME

Susumu Senaha; Tetsuya Chiba; Akira Ohno, and Shitomi Katayama, all of Kanagawa, Japan, assignors to Yokohama Kiko Co., Ltd. and NHK Spring Co., Ltd., both of Kanagawa, Japan

Continuation of Ser. No. 086,616, Oct. 19, 1979, abandoned, which is a division of Ser. No. 26,396, Apr. 2, 1979. This application Jul. 29, 1981, Ser. No. 288,257

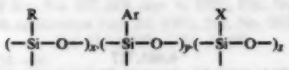
Claims priority, application Japan, Apr. 1, 1978, 53-38409

Int. Cl.³ B05D 3/02

U.S. Cl. 427—379 **27 Claims**

1. A method of producing heat resistant, layer-constructions which comprises

coating a heat resisting base substrate with a solution of a polyaralkylsiloxane having the formula



wherein R is a lower alkyl radical; Ar is an aryl radical; X is a polycondensable functional radical; x, y and z, each represent the molar proportion of the unit for which they are subscripts, respectively, and wherein the free bonds of each of the structural units shown in the formula are selected from the group as identified for R, Ar and X, or may combine with one another to form a bridging bond or may be a mono-functional radical, and

the molar fraction of aryl radicals with respect to the sum of aryl radicals and alkyl radicals is 0.65 to 1.00,

the functionality of the polycondensable functional radicals is 2 to 3, and

the ratio of the number of carbon atoms to that of silicon atoms is 4.25 to 16, said solution containing or not containing a curing agent, and

heat curing said coated layer by heating with a stepwise elevation of temperature in accordance with the following

(i) heating to volatilize and remove the solvent of said solution,

(ii) heating to cause an initial condensation reaction, and

(iii) heating to complete the reaction of remaining condensable functional groups.

4,465,712

SILOXANE-POLYESTER COMPOSITIONS AND USE THEREOF

James McVie, Barry, England, assignor to Dow Corning Limited, Barry, England

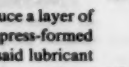
Filed Jan. 6, 1984, Ser. No. 568,867

Claims priority, application United Kingdom, Jan. 19, 1983, 8301374

Int. Cl.³ B05D 3/02

U.S. Cl. 427—387 **9 Claims**

1. A composition which consists essentially of (A) a siloxane-polyester copolymer resin having on average at least two groups per molecule selected from ≡SiOH groups and ≡COH groups, (B) one or more organic solvents for the siloxane-polyester copolymer, (C) a silane of the general formula



wherein R represents a hydrogen atom, an alkyl group having from 1 to 4 inclusive carbon atoms or an aliphatic hydrocarbon group attached to the nitrogen atom through a carbon to nitrogen bond and containing at least one amino group, R' represents an alkylene group having from 3 to 6 inclusive carbon atoms, X represents a monovalent hydrocarbon group having from 1 to 6 inclusive carbon atoms, Y represents an alkyl or an alkoxyalkyl group having less than 6 carbon atoms and a has a value of 0 or 1 and (D) a silane of the general formula $Q_nSi(OZ)_{4-n}$ wherein Q represents a monovalent group having less than 10 carbon atoms and composed of carbon and hydrogen or of carbon, hydrogen and oxygen wherein the oxygen is present in the form of one or more ether linkages, Z represents an alkyl group having from 1 to 6 carbon atoms or an alkoxyalkyl group having from 3 to 6 carbon atoms and n has a value of 0 or 1, or a partial hydrolysis and condensation product of the said silane.

7. A process for coating a substrate which comprises applying to the substrate a composition as claimed in claim 1 and thereafter curing the applied composition.

4,465,713

URETHANE COATINGS FROM ALIPHATIC AROMATIC DIISOCYANATES

Michele R. Lock, and Kurt C. Frisch, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 419,671

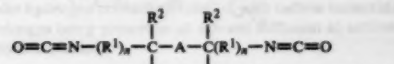
Int. Cl.³ B05D 3/02

U.S. Cl. 427—385.5 **10 Claims**

1. A method for coating a surface with improved gloss and nonyellowing characteristics consisting of

a. applying to a surface, a mixture comprising

(i) a first component according to the formula



wherein A is an organic radical including at least one aromatic ring; each R^1 is independently an aliphatic radical; each n is independently 0 or 1; and each R^2 is independently an organic or inorganic radical selected from the group consisting of a halogen and an aliphatic radical having from one to six carbon atoms, and

(ii) a second component comprising a polyahl; and

b. curing the mixture;

the ratio of the first component and second component, and the curing step being such that an adherent, solid coating is formed on said surface.

4,465,714

SEQUENTIALLY PULSED SPRAYING SYSTEM

John S. Petro, IV, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.

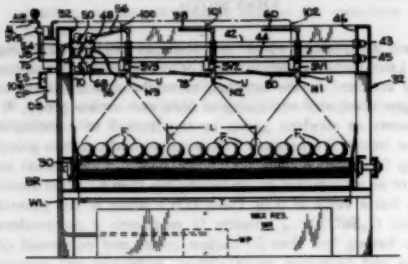
Filed Aug. 11, 1982, Ser. No. 407,200

Int. Cl.³ B05D 1/02

U.S. Cl. 427—424 **16 Claims**

1. In the method of spray coating moving articles supplied in a continuous stream to a conveying device that continually rotates the articles while they are being fed along a path and are sprayed from fixed nozzles that overlay and are transversely spaced across the path, the improvement comprising the steps of spraying sequentially from said nozzles to form a

spray pattern extending the full transverse extent of the conveyor and repeating the sequential spraying at intervals that



produce a continuous coating on articles advancing through the spray pattern of the nozzles.

4,465,715

PROCESS FOR THE PRETREATMENT OF A POLYOLEFIN PRODUCT BEFORE COATING

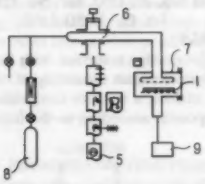
Katsuhide Manabe, Ichinomiya; Yutaka Sato, and Ryoichi Muroi, both of Aichi, all of Japan, assignors to Toyoda Gosei Co., Ltd., Haruhimura, Japan

Filed Jun. 26, 1981, Ser. No. 277,972

Claims priority, application Japan, Jun. 30, 1980, 55-88977

Int. Cl.³ B05D *3/06, 3/10*

U.S. Cl. 427—444 **6 Claims**



1. A process for the pretreatment of a polyolefin product before coating, said process consisting essentially of steps of treating the surface of the polyolefin product before coating using an organic solvent having a solubility parameter (SP value) equal or similar to that of the polyolefin and subsequently applying a plasma treating thereto in the presence of an active gas,

wherein said plasma treating is conducted by microwave treating an active gas under a vacuum.

4,465,716

SELECTIVE DEPOSITION OF COMPOSITE MATERIALS

Samuel C. Baber, Richardson, and Vernon R. Porter, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1982, Ser. No. 384,354

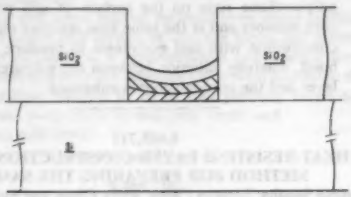
Int. Cl.³ H01L *21/21, 21/268*

U.S. Cl. 427—53.1 **16 Claims**

1. A process for selectively depositing a preselected composite material having at least two component elements on exposed areas of high-thermal-conductivity material and not on exposed low-thermal-conductivity material, comprising the steps of:

depositing a top layer of said composite material overall, said composite material being deposited with a small grain size;

irradiating said top layer at an absorbed energy density of greater than 0.05 Joules per square centimeter, whereby said top layer loses its adhesion to said low-thermal-conductivity material; and



mechanically removing remaining portions of said top layer from above said low-thermal-conductivity layer.

4,465,717

ASSEMBLY FOR MARKING ELONGATE OBJECTS

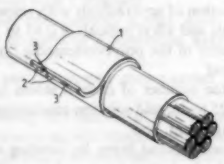
David Crofts, Cirencester, and David E. Barnwell, Highworth, both of England, assignors to Raychem Limited, London, England

Filed Sep. 22, 1980, Ser. No. 189,147

Claims priority, application United Kingdom, Oct. 1, 1979, 7933950

Int. Cl.³ G09F *3/10*; C09G *7/02*

U.S. Cl. 428—40 **4 Claims**



1. An assembly for marking an elongate object, said assembly comprising:

(a) a flexible heat-recoverable marker strip which is heat recoverable in the longitudinal direction having a first and second surface, said first surface being capable of receiving printed characters;

(b) a rigid carrier strip means for releasably supporting said flexible heat-recoverable marker strip and for preventing premature recovery of said marker strip when heated;

(c) a heat activatable adhesive means covering at least part of said second surface of said flexible heat-recoverable marker strip for providing a permanent bond between said flexible heat-recoverable marker strip and said elongate object; and

(d) pressure-sensitive adhesive means disposed longitudinally along said second surface of said marker strip for releasably adhering said second surface of said marker strip to said rigid carrier strip and for securing, at least temporarily, said marker strip in position about said elongate object after separation of said marker strip from said rigid carrier strip.

4,465,718

POLY (METH)ACRYLATE COMPOUNDS AND THEIR USE IN ANAEROBIC ADHESIVES AND SEALANTS

Werner Gruber, Korschenbroich, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

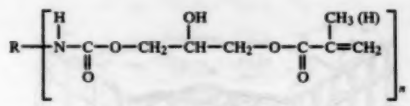
Filed Nov. 29, 1983, Ser. No. 556,033

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3245563

Int. Cl.³ C08G 18/38

U.S. Cl. 528—49 7 Claims

1. A compound of the formula



wherein R is a radical derived from an organic diisocyanate or triisocyanate and n is 2 or 3.

4,465,719

LIGHTWEIGHT CONCRETE AND STRUCTURAL ELEMENT INCORPORATING SAME

Harold E. Grice, 120 Abbott St., Salinas, Calif. 93901

Division of Ser. No. 137,340, Apr. 4, 1980, Pat. No. 4,351,670. This application Jun. 28, 1982, Ser. No. 392,489

Int. Cl.³ B32B 5/16, 13/00

U.S. Cl. 428—70 5 Claims

1. A composite structural element comprising:
a tubular shell of tensile material; and
a body of concrete material filling said tubular shell, said concrete material comprising
a cured cementitious matrix and a plurality of fabricated aggregate particles embedded therein, each of said particles comprising a core of cured cellular concrete of a type whose curing is accompanied by substantial shrinkage and a coating of cured cement, said cementitious matrix being of a material whose curing is accompanied by minimal shrinkage.

4,465,720

AUTOMOTIVE FLOOR MAT HAVING RIGIDIFYING SHEET-FORM ELEMENT

Ted A. Bell; Timothy S. Cooksey, and Daniel F. Lehner, all of Coshocton, Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio

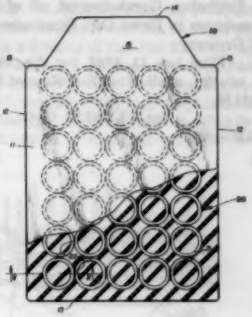
Continuation-in-part of Ser. No. 318,841, Nov. 6, 1981, Pat. No. 4,399,176, which is a continuation-in-part of Ser. No. 135,253, Mar. 31, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,578

The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.

Int. Cl.³ B62D 25/20, 9/00

U.S. Cl. 428—85 21 Claims

1. A floor mat for an automotive vehicle comprising
a relatively thin, flexible sheet-form main body formed from a pliable material and of a predetermined surface area dimension to cover a specified portion of a vehicle floor, and
a sheet-form rigidifying element secured in fixedly assembled association with said main body to effect structural rigidification thereof, said rigidifying element being formed of a material which is different from the material of said main body and disposed in substantially parallel relationship to said main body and coextensive with at least a selected area portion of said main body to impart structural rigidity thereto thereby effectively rendering at least that portion of said main body which is coextensive therewith substantially inflexible.



4,465,721

PREPARATION OF POLYCARBONATES

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Division of Ser. No. 218,501, Dec. 22, 1980, Pat. No. 4,414,264, which is a continuation-in-part of Ser. No. 32,633, Apr. 23, 1979, Pat. No. 4,243,779. This application Jun. 27, 1983, Ser. No. 508,132

Int. Cl.³ C08G 63/62

U.S. Cl. 528—86 8 Claims

1. A process of preparing a polycarbonate resin comprising passing a solution of dihydric phenol through a source of hydrogen to pick up hydrogen and reacting the dihydric phenol in the hydrogen containing solution with carbon monoxide, the hydrogen being present in an amount sufficient to activate the dihydric phenol.

4,465,722

PROCESS FOR THE PREPARATION OF EPOXIDE RESINS BY THE ADVANCEMENT METHOD

André Fiaux, Ollon, and Dinh L. Nguyen, Territet, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 27, 1983, Ser. No. 507,887

Claims priority, application Switzerland, Jul. 8, 1982, 4169/82

Int. Cl.³ C08G 59/02

U.S. Cl. 528—88 10 Claims

1. A process for the preparation of an epoxide resin mixture by reacting a polyhydric phenolic compound with an epoxide compound, which comprises reacting a compound A containing m phenolic hydroxyl groups, m being 2, 3 or 4, with a compound B containing more than one 1,2-epoxide group in the molecule, and glycidol in the presence of a catalyst at temperatures between 20° and 200° C., A and B being used in amounts such that 0.01 to 0.99 phenolic hydroxyl groups are present per epoxide group, and the amount of glycidol being not more than

$$\frac{(m-1)\cdot 74}{m} \cdot \frac{\text{(amount of } A\text{)}}{\text{(molecular weight of } A\text{)}}$$

4,465,723

FIXATION INSERT WITH IMPROVED FLASH-THROUGH SAFETY AND METHOD FOR MANUFACTURING THE SAME

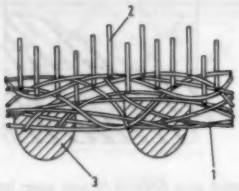
Jürgen Knoke, Weinheim; Holger Buchwald, Hemsbach, and Jürgen Fehlhaber, Gorxheimertal, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,533

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145138

Int. Cl.³ B32B *33/00*

U.S. Cl. 428—90 17 Claims



1. A fixation insert which resists back-riveting when applied by hot-pressing to an outer material, comprising a planar textile structure of natural and/or synthetic threads having coated on a front side thereof a thermally softenable adhesive compound and, on a back side thereof, having a layer of elastically resilient fibers predominantly protruding perpendicularly from the surface of said structure and elastically connected directly to the threads of said structure.

4,465,724

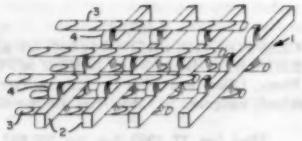
RETICULATE SHEET PRODUCT

Ole-Bendt Rasmussen, 7 Topstykket, 3460 Birkerod, Denmark

Division of Ser. No. 372,034, Apr. 26, 1982, which is a continuation of Ser. No. 134,551, Mar. 27, 1980, abandoned, which is a continuation of Ser. No. 928,457, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 681,531, Apr. 29, 1976, abandoned. This application Aug. 12, 1983, Ser. No. 522,675

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—109 2 Claims



1. An integrated reticulate sheet made from at least one polymeric material comprising at least two arrays of discrete elongated filamentitious structures arranged in crossing relationship characterized in that the arrays lie in different layers which are generally parallel with one another and have their mutually facing sides physically spaced apart at their closest points in a direction generally perpendicular to said sheet, substantially all of the filamentitious structures of one of said arrays being each bodily linked to a plurality of the filamentitious structures of a next adjacent crossing array by means of discrete intervening flexible links, said links extending generally in said perpendicular direction and bridging the separation between adjacent arrays, each said link being integrally connected to their respective opposite ends with filamentitious structures from two next adjacent crossing arrays thereof, the extent of each such connection in the lengthwise direction of the contiguous filamentitious structure being substantially smaller than the length of that structure.

4,465,725

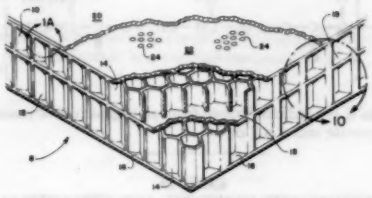
NOISE SUPPRESSION PANEL

Frank J. Riel, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jul. 15, 1982, Ser. No. 398,662

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 14 Claims



1. A double layer noise suppression honeycomb sandwich panel having structural strength for use in severe environments in and around high velocity fluid flow paths associated with aircraft gas turbine engines and providing a predetermined flow through resistance to satisfy acoustical requirements comprising:

(a) first and second non-metallic honeycomb cores, each having a multiplicity of endwise directed cells formed with walls of thin sheet material disposed transversely to the panel, said walls terminating in a pair of cell edges, the cell edges on one side of each said honeycomb core facing the cell edges on one side of the other honeycomb core;

(b) a first thin sheet of metallic microporous material positioned between the first and second honeycomb cores and adhesively bonded to the endwise facing cell edges of said honeycomb cores;

(c) a perforated facing of thin sheet material having two surfaces, one of said surfaces being adhesively bonded to the endwise cell edge of said first honeycomb core opposite said first thin sheet of microporous material;

(d) a second thin sheet of microporous material bonded to the other surface of said perforated facing of thin sheet material whereby air is permitted to enter the noise suppression panel and a relatively smooth outer surface is presented to a high velocity fluid flow; and

(e) an impervious facing of thin sheet material adhesively bonded to the endwise cell edge of said second honeycomb core opposite said first sheet of microporous sheet material.

4,465,726

RIBBED TERRY CLOTH-LIKE NONWOVEN FABRIC AND PROCESS AND APPARATUS FOR MAKING SAME

Rory A. Holmes, Princeton, and Donald V. Skistimas, Milltown, both of N.J., assignors to Chicopee, New Brunswick, N.J.

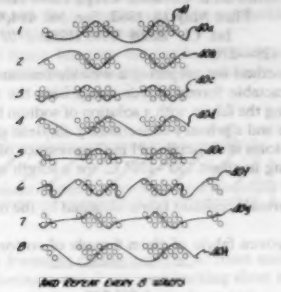
Filed Jun. 23, 1983, Ser. No. 507,414

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—131 14 Claims

1. A nonwoven fabric having the appearance of apertured ribbed terry cloth, said fabric being characterized by a repeating pattern of spaced parallel ribs, said ribs comprising areas of nodule-like tangled fibers alternating with parallelized strands of fibers running substantially in the direction of the longitudi-

nal axes of the ribs, said nodules being interconnected to the nodules in neighboring ribs through a network of bundles of



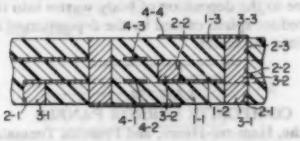
fibers each of which bundles is substantially entangled, said bundles defining rows of apertures running parallel to the ribs.

4,465,727

CERAMIC WIRING BOARDS

Tsuyoshi Fujita; Noriyuki Taguchi, both of Yokohama; Gyozo Toda, Hino; Takashi Kuroki, and Shoosaku Ishihara, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,874
Claims priority, application Japan, May 9, 1981, 56-68889
Int. Cl.³ H05K *3/00, 1/04;* B32B *3/24*
U.S. Cl. 428—138 14 Claims



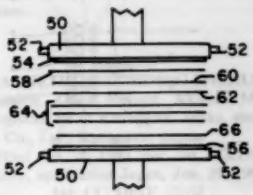
1. A ceramic wiring board which comprises ceramic part in which through-holes are made, sintered wiring pattern part provided on the surface of said ceramic part and sintered conductor part filled in said through-holes wherein said ceramic part comprises 80–99.9 wt% of ceramic and 0.1 wt% or more of a sintering assistant and at least said sintered conductor part filled in said through-holes is a conductor which comprises 80–99.5 wt% of a metal and 20–0.5% of the same sintering assistant as used in the ceramic part.

4,465,728

DYE DECORATED PLASTIC ARTICLES

John M. Haigh, deceased, late of Baton Rouge, La., and Johnathon Haigh, heir, Seabrook, N.H., assignors to H.L.H. Corp., St. Charles, Mo.

Continuation of Ser. No. 103,261, Dec. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 14,912, Feb. 26, 1979, abandoned, which is a division of Ser. No. 830,642, Sep. 6, 1977, Pat. No. 4,202,663, which is a division of Ser. No. 540,380, Jan. 13, 1975, Pat. No. 4,059,471, which is a continuation-in-part of Ser. No. 291,657, Sep. 25, 1972, Pat. No. 3,860,388. This application Apr. 28, 1982, Ser. No. 372,528
Int. Cl.³ B32B *3/00;* B41M *1/30, 1/42*
U.S. Cl. 428—156 17 Claims



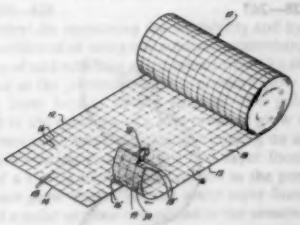
1. A dye decorated article comprising a plastic web penetrated with dispersed dye therein in a clearly defined pattern, the penetrated side thereof being free of dye adhesive and dye carrier.

4,465,729

CROSS-TEARABLE PLASTIC FILMS

Leopoldo V. Cancio, and Pai-Chuan Wu, both of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 290,354, Aug. 5, 1981, Pat. No. 4,380,564, which is a continuation-in-part of Ser. No. 57,792, Jul. 16, 1979, Pat. No. 4,298,647. This application Apr. 5, 1983, Ser. No. 482,182
The portion of the term of this patent subsequent to Nov. 3, 1989, has been disclaimed.
Int. Cl.³ B32B *3/30, 27/20*
U.S. Cl. 428—167 20 Claims



1. A method of producing a plastic film which may be torn by hand along one or more hand-tear lines without the use of cutting tools comprising the steps of:

providing a polymeric material,

introducing into said polymeric material a material forming a dispersed second phase in a matrix of said polymeric material,

forming said polymeric material containing said dispersed second phase into a film, and

embossing said film to form a series of substantially parallel continuous, imperforate hand-tear lines of reduced film thickness therein, said lines being spaced less than about 1/16" apart,

said material forming said dispersed second phase being

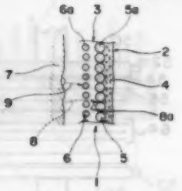
present in said film in an amount effective to initiate and propagate tear along said hand-tear lines by hand-tearing without the use of cutting tools.

4,465,730

LEATHER-LIKE TEXTILE MATERIAL

Hozuma Okada, Kyoto, Japan, assignor to Sakashita Co., Ltd., Kyoto, Japan

Filed May 2, 1983, Ser. No. 490,411
Claims priority, application Japan, May 6, 1982, 57-66424[U]
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—246 **9 Claims**



1. A leather-like textile material essentially consisting of, in combination:

(a) a multi-layered substrate having first and second fabric layers integrated together, said first fabric layer being made of a fabric material having a high water permeability and a lower water retentivity and said second fabric layer being made of a fabric material having a high water retentivity and a low water permeability; and

(b) a layer of synthetic resin having a leather-like appearance coated on the outer side of the second fabric layer while the outer side of the first fabric layer is adapted to be faced to the body of a wearer.

4,465,731

UNIVERSAL CAMOUFLAGE FOR MILITARY OBJECTS

Gunter Pusch, Bannholzweg 12, 6903 Neckargemund 2, and Dieter E. Aisslinger, Heidestr. 54, 6222 Geisenheim, both of Fed. Rep. of Germany

Filed Jun. 27, 1983, Ser. No. 507,969
Int. Cl.³ F41H *3/00*
U.S. Cl. 428—247 **12 Claims**

1. A camouflage material whose convective heat exchange pattern simulates the thermal properties of a natural background and having a non planar surface comprising a mesh support, a conductive layer on said support, said conductive layer having a conductivity of 2 to 50 ohms per square and an outer layer on said conductive layer containing metallic material and having an emissivity in the wave length of far infrared of about 20 to 70%, and wherein the ratio of the width of the space between two filaments to the width of each filament in the mesh is about 1 to 3.

4,465,732

PROCESS FOR TREATMENT OF FIBERS

Jerry H. Hunsucker, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 16, 1983, Ser. No. 494,837
Int. Cl.³ B32B *7/00*; B05D *3/02*
U.S. Cl. 428—270 **10 Claims**

1. A method for preparing a wrinkle-resistant fabric having low extractable formaldehyde comprising the steps of (a) impregnating the fabric with a solution of sodium hydroxymethyl sulfonate and a primary or secondary alkylene glycol of 2 to 10 carbon atoms at an acidic pH in the presence of a catalyst, and (b) heating to about 150°–170° C. for a length of time to effect a cure.

6. A wrinkle resistant fabric obtained by the method of claim 1.

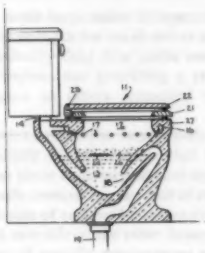
9. A woven fabric of claim 6 made of cotton or wool.

4,465,733

DISPENSER FOR TOILET MATERIALS

B. Carmichael Sumner, 220 E. Gaston St., Savannah, Ga. 31401

Continuation-in-part of Ser. No. 262,934, May 12, 1981, abandoned. This application Sep. 22, 1983, Ser. No. 534,653
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 **25 Claims**



1. A dispenser for use in toilet bowls, said dispenser comprising:

a sheet of non-woven fibrous material comprising fibers loosely bonded to each other to form a sheet that can be handled in its dry form but absorbs water quickly when placed on the water in a toilet bowl and is essentially degradable when wet so as to readily disintegrate upon impact by body waste; and

foam-forming material attached to the fibrous material to react in the presence of water in a toilet bowl to generate a layer of small-bubbled foam, the quantity of foam being sufficient to substantially cover the exposed surface of water in the toilet bowl to a depth sufficient to muffle noise due to the deposition of body wastes into the water and to reduce splash caused by the deposition of the body wastes into the water.

4,465,734

COMPOSITE MIRROR PANELS

Pierre Laroche, Ham-sur-Heure, and Francois Toussaint, Montigny-le-Tilleul, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed May 4, 1982, Ser. No. 374,907
Claims priority, application United Kingdom, Aug. 21, 1981, 8125666
Int. Cl.³ B32B *5/20*
U.S. Cl. 428—317.1 **25 Claims**

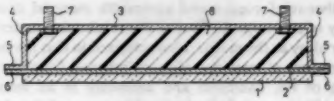
1. A method of manufacturing a composite mirror panel comprising the steps of:

water-tightly bonding a first backing sheet made of water-proof material to the rear side of a mirror including a

vitreous sheet bearing radiation-reflecting coating on its rear side, thereby forming a mirror/backing sheet laminate;

locating the laminate and a second backing sheet between a pair of dies with the laminate and the second backing sheet positioned in spaced relationship;

injecting the space between the laminate and the second backing sheet with a foamable plastic material;



allowing the foamable plastic material to foam and thereby press the laminate and the second backing sheet into close conformity with the respective die faces and,

allowing the foam to set and adhere to each backing sheet while the laminate and second backing sheet are pressed against the die faces to form a substantially rigid composite sandwich structure.

22. A panel made by the method according to claim 1.

4,465,735

MAGNETIC RECORDING MEDIUM

Fumio Togawa, Ohtsu, and Shigeo Aoyama, Ibaraki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 23, 1982, Ser. No. 422,464

Claims priority, application Japan, Sep. 24, 1981, 56-151470

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—329 **3 Claims**

1. A magnetic recording medium comprising a magnetic layer superimposed on a support base, said magnetic layer comprising uniform acicular magnetic uniformly cobalt-doped iron oxide particles having crystalline magnetic anisotropy and a ratio of Fe^{2+}/Fe^{3+} of 0.05 or less in said cobalt-doped iron oxide particles, a squareness ratio in the vertical direction of 0.6 or more and an orientation ratio (squareness ratio in the vertical direction/squareness ratio in the lengthwise direction) of 0.7 or more so as to maintain sufficient vertical magnetic components in said magnetic layer.

4,465,736

SELECTIVELY LIGHT TRANSMITTING FILM AND PREFORMED LAMINAR STRUCTURE

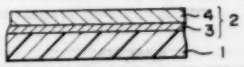
Toshio Nishihara, Yamaguchi; Tadashi Shingu, and Nobuo Suzuki, both of Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 19, 1982, Ser. No. 435,184

Claims priority, application Japan, Oct. 19, 1981, 56-165603; Oct. 19, 1981, 56-165605; Oct. 20, 1981, 56-166402

Int. Cl.³ B32B *15/08, 27/42*

U.S. Cl. 428—332 **14 Claims**



6. A preformed self-supporting flexible laminar structure primarily defined in two dimensions and transparent when its exterior surfaces are smooth composed of

(i) A selectively light transmitting or electrically conductive film having a heat shrinkage in a range expressed by the formulae below

$$4.4 \geqq E \geqq 0.00028 \times (d-128)^2$$

$$d < 125$$

where E represents the heat shrinkage in %, and d represents a thickness of the film in μm, and essentially consisting of a carrier film of transparent polymer film in less than about 125 μm thickness and a thin selectively light transmitting or electrically conductive coating placed on said carrier film,

(ii) a first interlayer film 0.001 mm to 1 mm thick adhered to the thin selectively light transmitting or electrically conductive coating on said carrier film, the opposite surface of said interlayer film adhered to said thin selectively light transmitting or electrically conductive coating side presenting the exterior surface of said laminar structure,

(iii) said laminar structure adapted for further lamination between rigid transparent plies to form a safety glass-type construction.

4,465,737

MAGNETIC RECORDING MEDIUM

Hajime Miyatuka; Akira Kasuga; Akihiro Matsufuji, and Tsutomu Sugisaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 31, 1983, Ser. No. 462,179

Claims priority, application Japan, Jan. 29, 1982, 57-12894

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—339 **10 Claims**

1. A magnetic recording medium comprising:

a support having coated thereon;

a magnetic layer containing a ferromagnetic metal powder and a binder;

wherein said ferromagnetic metal powder has a specific surface area of not less than 30 m^2/g, said magnetic layer containing a fatty acid and a fatty acid ester in a total amount of 2 to 10 wt% based on the ferromagnetic metal powder, wherein the proportion of the fatty acid ester is 15 to 60 wt% based on the total amount of the fatty acid ester and fatty acid, and further wherein the magnetic layer has a surface roughness of not more than 0.03μ.

4,465,738

WETTABLE COATINGS FOR INORGANIC SUBSTRATES

Franklin S. Chang, Mt. Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 15, 1983, Ser. No. 504,563

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—426 **11 Claims**

1. A method for improving the wettability and hydrophilicity of the surface of an inorganic substrate comprising applying to a surface of said substrate a first layer formed by the reaction of an alkane in the presence of a low pressure glow discharge, and a top layer formed by the reaction of a polar organic compound in the presence of a low pressure glow discharge.

10. An inorganic substrate having a coating on at least one surface, said coating comprising a first layer formed by the reaction of a C_1–C_6 alkane hydrocarbon in the presence of a low pressure glow discharge, and a top layer formed by the reaction of a polar organic compound in the presence of a low pressure glow discharge, each of said reactions being carried out at a temperature in the range of from about 10° to about 40° C. and at a pressure in the range of from about 0.1 to about 1.0 Torr.

4,465,739

SUBSTRATES COATED WITH ALUMINUM OXIDE SOLUTIONS

Bulent E. Yoldas, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 293,820, Aug. 17, 1981, abandoned. This application Oct. 13, 1982, Ser. No. 434,150

Int. Cl.³ B32B *15/00*; B05D *3/02*

U.S. Cl. 428—432 **18 Claims**

1. A method of forming a polymerized Al_2O_3 coating on a

substrate comprising preparing a clear partially hydrolyzed aluminum alkoxide solution by

(A) mixing $Al(OR)_3$ with about 0.4 to about 1 mole of water per mole of $Al(OR)_3$ in the presence of sufficient alcohol to give a maximum weight % of equivalent Al_2O_3 of 10% where R is alkyl to C_6;

(B) applying said solution to a surface of a substrate; and

(C) heating said solution on said surface to at least about 400° C.

10. A polymerized Al_2O_3 coating on a substrate formed according to the method of claim 1.

4,465,740

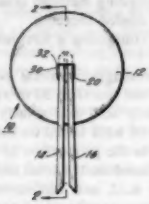
DECORATIVE MEDALLION AND METHOD AND MACHINE FOR MANUFACTURE

George B. Diamond, Anthony & Woodglen Rds., R.D., Glen Gardner, N.J. 08826, and Ralph H. Helmrich, Glen Gardner, N.J., assignors to George B. Diamond, Glen Gardner, N.J.

Filed May 11, 1982, Ser. No. 376,967

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—542.2 8 Claims



1. A medallion with attached thong, comprising:

a metallic medallion element having a flap defined within the periphery of the element, the flap being cut from the element, so that one edge of the flap remains attached to the element while the opposite edge of the flap is a free edge; the flap being tilted around the attached edge thereof, so that the free edge thereof is tilted out of one surface of the element, whereby the tilted flap defines an opening shaped to the size of the flap in the element into which opening a thong is insertable;

a thong of flexible material extending into the opening; the flap free edge includes a generally hook-like formation thereon for clamping into the thong, and as the flap is crimped toward an untilted orientation tnereof, the flap clamps onto the thong for retaining the thong to the element.

5. A method of assembling a thong to a metallic element, to define a thonged medallion, comprising:

cutting a flap into a metallic element for defining an opening within the periphery of the element, the flap being cut from the element so that one edge of the flap remains attached to the element while the opposite edge of the flap is a free edge; while cutting the flap, also defining a hook-like formation on the opposite free edge of the flap for securely gripping a thong,

tilting the flap around the attached edge thereof for moving the opposite free edge thereof to tilt out of one surface of the element, so that the tilted flap defines an opening in the element into which a thong is insertable;

the method comprising inserting a thong of flexible material into the opening at the flap, and then crimping the flap back toward its untilted orientation for clamping the flap on the thong for retaining the thong to the element.

4,465,741

FIBER-REINFORCED METAL COMPOSITE MATERIAL

Kohji Yamatsuta, Osaka, and Ken-ichi Nishio, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 23, 1981, Ser. No. 285,974

Claims priority, application Japan, Jul. 31, 1980, 55-106154; Apr. 7, 1981, 56-52616; Apr. 7, 1981, 56-52617

Int. Cl.³ B32F *15/20*

U.S. Cl. 428—614 12 Claims

1. A fiber-reinforced metal composite material consisting essentially of an inorganic fiber as the reinforcing material and a metal or alloy as the matrix, characterized in that the metal or alloy comprises at least one element selected from the group consisting of tin, cadmium and antimony in an amount of 0.0005 to 10% by weight (calculated in terms of the element).

4,465,742

GOLD-PLATED ELECTRONIC COMPONENTS

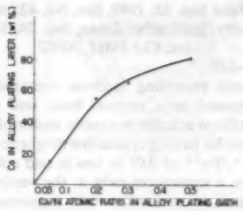
Teruyoshi Nagashima; Akio Takami, and Akiyo Kasugai, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 72,750, Sep. 5, 1979, abandoned. This application Jan. 29, 1982, Ser. No. 344,158

Claims priority, application Japan, Sep. 5, 1978, 53-108976

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—621 2 Claims



1. An electronic component, comprising a member consisting of:

a ceramic board substrate having a metallized surface formed thereon;

a metal alloy layer coated on the substrate, the metal alloy layer consisting essentially of nickel and cobalt, wherein the cobalt is contained in an amount of 7 to 40% by weight, wherein the metal alloy layer is formed in a thickness of 0.5 to 5 microns; and

a gold-plated outer surface layer coated on said metal alloy, said gold-plated outer surface layer forming the outermost surface of the electronic component, wherein the gold-plated outer surface layer is formed in a thickness of 0.5 to 2 microns.

4,465,743

ELECTROCHEMICAL CELLS HAVING LITHIUM TETRACHLOROIODATE CATHODES

Paul M. Skarstad, Plymouth, and Thomas G. Hayes, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

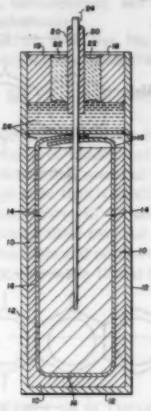
Filed Dec. 15, 1982, Ser. No. 449,966

Int. Cl.³ H01M *6/16*

U.S. Cl. 429—105 18 Claims

11. An electrochemical cell having an anode consisting essentially of lithium, an electrolyte consisting essentially of thionyl chloride, a cathode consisting essentially of lithium

tetrachloroiodate associated with the anode and the electrolyte and a conductivity enhancing lithium salt dissolved in the



electrolyte for enhancing the conductivity thereof with respect to the anode metal ions.

4,465,744

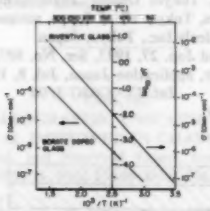
SUPER IONIC CONDUCTIVE GLASS

Sherman Susman, Park Forest, Ill., and Kenneth J. Volin, Fort Collins, Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,597

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **19 Claims**



1. An ionically conductive glass having the general formula: $A_{1+x}D_{2-x/3}Si_xP_{3-x}O_{12-2x/3}$, wherein A is an alkali metal, D is selected from the class consisting of Zr and mixtures of Zr and one or more of Ti, Ge, Al, Sb, Be, and Zn, and X is in the range of from 2.25 to 3.0.

4,465,745

CRYSTALLINE SOLID LITHIUM CATION CONDUCTIVE ELECTROLYTE

James R. Akridge, Parma, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1983, Ser. No. 509,024

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **11 Claims**

1. A solid electrolyte comprising a Li_2S, SiS_2-based crystalline lithium cation conductor.

4,465,746

VITREOUS SOLID LITHIUM CATION CONDUCTIVE ELECTROLYTE

James R. Akridge, Parma, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1983, Ser. No. 509,132

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **17 Claims**

1. A solid electrolyte comprising a vitreous lithium cation conductor of the composition:

$$SiS_2, xLi_2S, yLiI$$

where

x is from 0.8 to 1.5,

y is from 0 up to about 2 and wherein said composition has a conductivity of at least 0.75×10^{-4} ohm^{-1} cm^{-1} at 25° C.

4,465,747

ALKALI METAL OR ALKALINE EARTH METAL COMPOUND ADDITIVE FOR MANGANESE DIOXIDE-CONTAINING NONAQUEOUS CELLS

William P. Evans, Rocky River, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1983, Ser. No. 509,131

Int. Cl.³ H01M *4/50*

U.S. Cl. 429—194 **10 Claims**

1. A nonaqueous cell comprising an active metal anode, a nonaqueous electrolyte solution comprising a solute at least one organic solvent dissolved in and a solid cathode comprising manganese dioxide, a binder and a conductive agent; the improvement wherein the cathode contains a minor amount of an additive selected from the group consisting of the borates, silicates, molybdates, phosphates, aluminates, niobates, tantalates, titanates, vanadates, zirconates, manganates (Mn +4), cobaltates, and tungstates of alkali metals or alkaline earth metals wherein the alkali metal is selected from the group consisting of lithium, potassium, rubidium and cesium and wherein the alkaline earth metal is selected from the group consisting of magnesium, calcium, strontium, and barium.

4,465,748

GLASS FIBRE PAPER SEPARATOR FOR ELECTROCHEMICAL CELLS

Frank J. T. Harris, Cheltenham, England, assignor to Evans Adlard & Company Limited, Gloucestershire, Great Britain

Filed Apr. 20, 1983, Ser. No. 486,566

Claims priority, application United Kingdom, Apr. 20, 1982, 8211419

Int. Cl.³ H01M *10/06*

U.S. Cl. 429—247 **9 Claims**

1. A separator suitable for electrochemical cells of the lead-acid recombinant type, comprising a sheet of entangled glass fibres, wherein between 5 and 35% by weight of the fibres have a diameter of less than 1 μm.

4,465,749

ELECTROSTATIC CHARGE DIFFERENTIAL AMPLIFICATION (CDA) IN IMAGING PROCESS

John W. May, Rochester, and Yee S. Ng, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 20, 1983, Ser. No. 506,256

Int. Cl.³ G03G *13/00*

U.S. Cl. 430—54 **13 Claims**

1. A method of amplifying an electrostatic charge differential pattern comprising:

(a) imagewise forming a first toner deposit by developing a first electrostatic charge pattern having a first charge differential per unit area whose maximum value is no greater than a preselected level,

(b) in an image-amplification element comprising a charge-

holding surface layer overlying a field-supporting electrode, forming a current-carrying path between said first toner deposit and said field-supporting electrode,

(c) under conditions in which nontoned regions of said charge-holding layer are not photoexcited, overall charging said image-amplification element with sufficient charge to form an enhanced electrostatic charge pattern having a second charge differential per unit area whose maximum value is greater than said preselected value, and

(d) developing said second charge pattern into a second toner deposit.

4,465,750

PHOTOCONDUCTIVE MEMBER WITH A -SI HAVING TWO LAYER REGIONS

Kyosuke Ogawa, Sakurashinmachi; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo, and Yoichi Osato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,418

Claims priority, application Japan, Dec. 22, 1981, 56-208493; Dec. 22, 1981, 56-208494; Dec. 22, 1981, 56-208495

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—57 **31 Claims**

1. A photoconductive member which comprises a support for a photoconductive member and an amorphous layer overlying the support and comprising a first layer region and a second layer region, the first layer region being composed of an amorphous material containing silicon atoms as a matrix at least one of hydrogen atoms or halogen atoms, exhibiting photoconductivity, and containing a p-type impurity or an n-type impurity such that the impurity is distributed nonuniformly and continuously in the direction of the layer thickness and substantially uniformly in the direction substantially parallel to the layer surface, and the second layer region being composed of a member selected from the group consisting of an amorphous material of the formula, Si_aC_{1-a} $(0.4<a<1)$, an amorphous material of the formula, $[Si_bC_{1-b}]_cH_{1-c}$ $(0.5<b<1,\ 0.6\leqq c<1)$, an amorphous material of the formula, $[Si_dC_{1-d}]_eX_{1-e}$ $(0.47<d<1,\ 0.8\leqq e<1$, X is a halogen atom), and an amorphous material of the formula, $[Si_fC_{1-f}]_g(H+X)_{1-g}$ $(0.47<f<1, 0.8\leqq g<1$, X is a halogen atom).

4,465,751

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Kouichi Kawamura, and Hideo Sato, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 24, 1982, Ser. No. 444,118

Claims priority, application Japan, Nov. 27, 1981, 56-190235

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—64 **6 Claims**

1. An electrophotographic light-sensitive material comprising a conductive layer containing cuprous iodide, a gelatin layer consisting essentially of gelatin, and a photoconductive layer formed in this order.

4,465,752

ORGANIC PHOTOCONDUCTIVE COMPOSITIONS FOR USE IN ELECTROPHOTOGRAPHY

Masami Sugiuchi, Yokohama; Masataka Miyamura, Kamakura, and Yasunobu Onishi, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

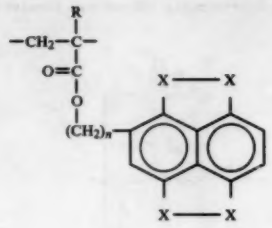
Filed May 7, 1982, Ser. No. 376,101

Claims priority, application Japan, May 15, 1981, 56-72187

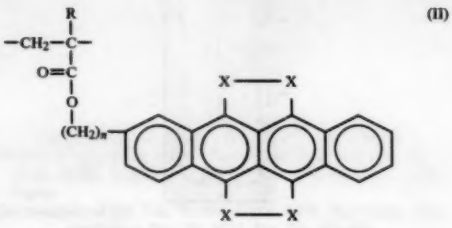
Int. Cl.³ G03G *5/07*

U.S. Cl. 430—75 **13 Claims**

1. Organic photoconductive compositions for electrophotography comprising a polymer having molecular weight of from 10^3 to 10^6 containing as main units a naphthalene derivative represented by the formula (I) and/or a naphthacene derivative represented by the formula (II):



(I)



(II)

wherein R represents a hydrogen atom or a methyl group, n is an integer of from 0 to 3, and X represents a sulfur atom or a selenium atom;

and an electron acceptor and/or a sensitizer, the proportion of said polymer to said electron acceptor ranging from 1 to 10 moles of the former per 1 mole of the latter.

4,465,753

INDOLINE ELECTROPHOTOCONDUCTOR

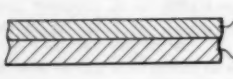
Hisami Tanaka, Tokyo; Osamu Takenouchi, Kitamoto, and Tatsuo Kawara, Tokyo, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 507,914

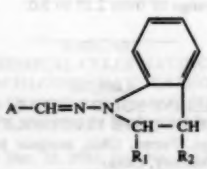
Claims priority, application Japan, Jul. 8, 1982, 57-117849

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—79 **16 Claims**



1. An electrophotoconductor comprising a photosensitive layer containing an indoline compound of the general formula



wherein A is an aromatic hydrocarbon or aromatic heterocyclic group which may have a substituent, and R_1 and R_2, independently from each other, are a hydrogen or halogen atom, or an alkyl, aralkyl or aryl group.

4,465,754

WATER-FIXABLE ELECTROSTATIC TONER POWDER CONTAINING HYDROLYZED POLYVINYL ESTER

Nicolaas P. J. Kuin, Grubbenvorst, and Jozef J. A. Pleyers, Baarlo, both of Netherlands

Filed Oct. 22, 1982, Ser. No. 436,027
Claims priority, application Netherlands, Oct. 27, 1981, 8104843
Int. Cl.³ G03G 9/08
U.S. Cl. 430—109 6 Claims

1. A water-fixable toner powder the individual particles of which consist essentially of binder and additive distributed therein, said binder consisting essentially of an at least 50% hydrolyzed polyvinyl ester that is swellable but insoluble in water at a temperature below 30° C. and said additive being principally finely divided filler material of less than 3 μm in particle size that is insoluble and non-swellable in water and is present in an amount of between 10 and 60% of the volume of said toner particles.

4,465,755

PRESSURE FIXABLE ELECTROSTATOGRAPHIC TONER MATERIAL COMPRISING ENCAPSULATED PARTICLES CONTAINING CURING AGENT

Masataka Kiritani, and Takeshi Mikami, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd.

Filed Oct. 19, 1982, Ser. No. 435,341
Claims priority, application Japan, Oct. 21, 1981, 56-168137; Dec. 1, 1981, 56-193464
Int. Cl.³ G03G 9/08
U.S. Cl. 430—111 12 Claims

1. An electrostatographic toner material comprising encapsulated toner particles having an average particle size in the range from about 0.5 to about 1,000 microns, in which the toner particle comprises a pressure fixable adhesive core material containing a colorant and a curable substance and a pressure rupturable shell enclosing the core material, the outer surface of the shell being provided with a curing agent capable of curing said curable substance.

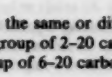
4,465,756

ELECTROSTATOGRAPHIC ENSCAPSULATED TONER MATERIAL IMPROVED IN CHARGEABILITY

Takeshi Mikami, and Noriyuki Hosoi, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1982, Ser. No. 432,064
Claims priority, application Japan, Oct. 22, 1981, 56-169033
Int. Cl.³ G03G 9/16
U.S. Cl. 430—138 11 Claims

1. An electrostatographic toner material for a pressure fixing process comprising powdery encapsulated toner particles having an average particle size in the range from about 0.5 to about 1,000 microns, in which the toner particle comprises a pressure fixable adhesive core material containing a colorant and a pressure rupturable shell enclosing the core material, the outer surface of the shell being provided with a surface active agent having the following hydrophobic group:



in which R^1 and R^2 are the same or different, and each is an aliphatic hydrocarbon group of 2–20 carbon atoms or an aromatic hydrocarbon group of 6–20 carbon atoms.

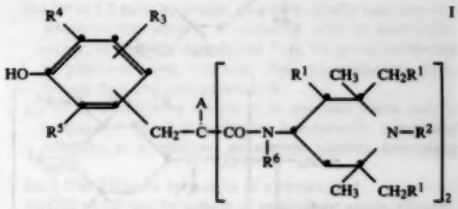
4,465,757

RECORDING MATERIAL FOR COLOR PHOTOGRAPHY

David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

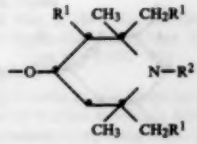
Filed Sep. 16, 1983, Ser. No. 533,530
Claims priority, application Switzerland, Sep. 21, 1982, 5578/82
Int. Cl.³ G03C 5/54, 7/26
U.S. Cl. 430—216 5 Claims

1. A recording material for colour photography which, in at least one light-sensitive silver halide emulsion layer, an intermediate layer, an image-receiving layer and/or a protective layer, contains, as a stabiliser, at least one polyalkylpiperidine compound of the formula I

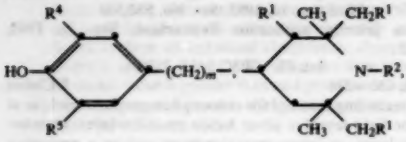


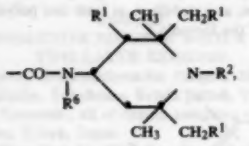
I

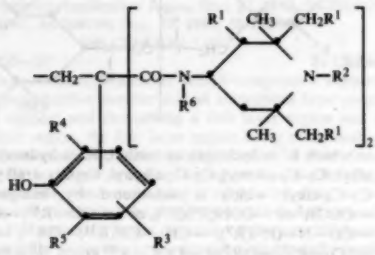
in which R^1 is hydrogen or methyl, R^2 is hydroxyl, C_1–C_{12}-alkyl, C_3–C_6-alkenyl, C_3–C_4-alkynyl, C_7–C_{12}-aralkyl, gycidyl, C_1–C_4-alkyl which is substituted by halogen, cyano, —$COOR^7$ or —$CON(R^8)(R^9)$, or a —CO—R^{10}, —CO—OR^7, —CO—N—$(R^8)(R^9)$, —CH_2—$CH(R^{11})$—OR^{12}, —SO—R^{13}, —SO_2—R^{13}, —OR^7 or —OOC—R^{10} group, R^3 is hydrogen or methyl, R^4 is C_1–C_8-alkyl, C_5–C_8-cycloalkyl, C_7–C^9-phenylalkyl, phenyl or C_7–C_{10}-alkylphenyl, R^5 is hydrogen, C_1–C_8-alkyl, C_5–C_8-cycloalkyl, C_7–C_9 -phenylalkyl, phenyl or C_7–C_{10}-alkylphenyl, R^6 is hydrogen, C_1–C_{18}-alkyl, C_3–C_6-alkenyl, C_3–C_{12}-cycloalkyl, C_7–C_{12}-aralkyl, C_7–C_{10}-alkylphenyl or C_2–C_4 alkyl which is substituted by —OR^8, —$N(R^9)_2$ or a group of the formula



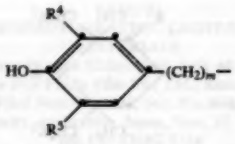
R^7 is C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, R^8 is C_1–C_{12}-alkyl, allkyl, cyclohexyl, benzyl or phenyl, R^9 is hydrogen, C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, or R^8 and R^9, together with the N atom to which they are bonded, are a 5-or 6-membered heterocyclic ring, R^{10} is hydrogen, C_1–C_{12}-alkyl, C_2–C_6-alkenyl, chloromethyl, C_5–C_8-cycloalkyl, C_7–C_{12}-aralkyl, phenyl, C_7–C_{10}-alkylphenyl or phenyl, phenylmethyl or phenylethyl which are substituted by 1 or 2 C_1–C_4-alkyl groups and a hydroxyl group, R^{11} is hydrogen, C_1–C_4-alkyl, C_2–C_{13}-alkoxymethyl, phenyl or phenoxymethyl, R^{12} is hydrogen, C_1–C_{12}-alkyl, —CO—R^{10} or —CO—$N(R^8)(R^9)$, R^{13} is C_1–C_{12}-alkyl, phenyl or C_7–C_{18}-alkylaryl, A is hydrogen, C_1–C_{18}-alkyl, C_1–C_{10}-alkyl which is substituted by at least one of the —OR^{14}, —SR^{15}, —CN, —CO—X—R^{16}, —O—CO—R^{17} or —$P(O)(OR^{18})_2$ groups, C_2–C_{20}-alkyl which is interrupted by —O—, —S—, —SO— or —SO_2—, C_3–C_{18}-alkenyl, C_3–C_8-alkynyl, C_3–C_{12}-cycloalkyl, C_6–C_{10}-alkylcycloalkyl, C_6–C_{10}-cycloalkylalkyl, C_7–C_{12}-aralkyl, C_8–C_{16}-alkylaralkyl, phenyl, a —CN, —CO— R^{20}, —SO_2R^{21} or —P-(O)(OR^{18}) group or one of the following groups.



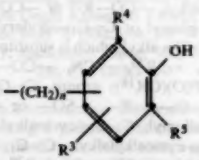




in which X is —O— or —N(R^{19})—, R^{14} is phenyl, benzyl or cyclohexyl, R^{15} is phenyl or C_7–C_9-phenylalkyl, R^{16} is C_1–C_{18}-alkyl, C_5–C_8-cycloalkyl and R^{17} is C_1–C_{18}-alkyl, C_5–C_8-cycloalkyl, phenyl, C_7–C_9-phenylalkyl or a group of the formula



R^{18} is C_1–C_8-alkyl, allyl or phenyl, R^{19} is hydrogen, C_1–C_{18}-alkyl, allkyl, cyclohexyl, benzyl or phenyl or, together with R^{16} and the N atom, a 5- or 6-membered heterocyclic ring, R^{20} is hydrogen, C_1–C_{18}-alkyl, C_2–C_6-alkenyl, C_5–C_8-cycloalkyl, phenyl, C_7-C_{10}-alkylphenyl or C_7 –C_9-phenylalkyl, R^{21} is C_1–C_{18}-alkyl, cyclohexyl, phenyl, naphthyl, C_7–C_{18}-alkylaryl, C_7–C_9-phenylalkyl or a group of the formula



m is zero, 1 or 2, and n is zero, 1, 2 or 3.

4,465,758

1,3-DIAZA-9-THIA-ANTHRACENE-2,4-DIONES AND PHOTOPOLYMERIZABLE MIXTURES CONTAINING SAME

Rainer Wingen, Frankfurt; Klaus Horn, Hofheim, and Walter Lutz, Mainz-Kastel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 29, 1983, Ser. No. 527,467

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1982, 3232621

Int. Cl.[3] **C07D** *495/04;* **C08F** *2/46;* **G03C** *1/70*

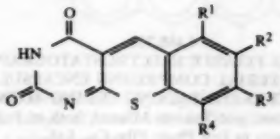
U.S. Cl. 430—288 **13 Claims**

1. A photopolymerizable mixture consisting essentially of:

(a) a polymeric binder,

(b) a polymerizable compound having at least two terminal ethylenically unsaturated groups and a boiling point of more than 100° C., and

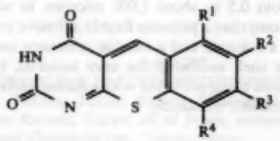
(c) a polynuclear N-hetercyclic compound of the general formula (II) as a photoinitiator



(II)

wherein R^1, R^2, R^3 and R^4 are identical or different and each denotes a hydrogen or halogen atom, an alkyl, alkoxy, carboxyl, or alkoxy-carbonyl group, or two of them together form a condensed aromatic radical.

10. A compound of the general formula



(II)

wherein

R^1, R^3 and R^4 are identical or different and each denotes a hydrogen or halogen atom, an alkyl, alkoxy, carboxyl or alkoxy-carbonyl group,

R^2 denotes an alkoxy, carboxyl or alkoxy-carbonyl group, or two of the groups R^1, R^2, R^3, and R^4 together form a condensed aromatic radical.

4,465,759

METHOD OF FABRICATING A PELLICLE COVER FOR PROJECTION PRINTING SYSTEM

Dawn L. Duly; Henry Windischmann, both of Huntington, and W. D. Buckley, Easton, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 14, 1983, Ser. No. 466,268

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—321 **8 Claims**

1. A method of fabricating a pellicle cover assembly for use in a projection system for forming an image on a radiation sensitive wafer, said method comprising the steps of mounting

a thin membrane on a metal ring, said membrane including a layer of titanium and a layer of gold, coating the front surface of said membrane with a uniform thin polymer film, curing said polymer film, coating the back surface of the membrane with photoresist, defining an aperture of preselected dimension in said photoresist by exposure and development, the boundaries of said aperture being substantially adjacent the inner surface of said metal ring, baking said photoresist, etching said thin membrane away leaving a free standing polymer film extending across said aperture.

4,465,760

PRODUCTION OF RELIEF IMAGES OR RESIST IMAGES BY A NEGATIVE-WORKING METHOD

Reinhold J. Leyrer, Ludwigshafen; Dietrich Saenger, Frankenthal, and Uwe Klinsmann, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 22, 1983, Ser. No. 525,394

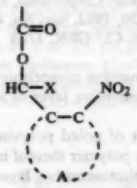
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1982, 3231145

Int. Cl.³ G03F 7/10; G03C 1/495, 1/71, 5/16

U.S. Cl. 430—325 **14 Claims**

1. A process for the production of a relief image or resist image which constitutes a negative image of an image-bearing transparency, wherein a photosensitive resist layer which is applied to a base, is crosslinkable after exposure and contains, as the photosensitive component, a compound possessing two or more o-nitrocarbinol ester groups of the formula (I)

(I)



where A is a radical of an unsubstituted or substituted 5-membered to 14-membered aromatic or heteroaromatic ring system, and X is hydrogen, alkyl of 1 to 8 carbon atoms or an unsubstituted or substituted aryl or aralkyl radical, and which also contains a compound which effects crosslinking and possesses two or more reactive groups which are capable of reacting with —COOH groups under the action of heat to form a covalent chemical bond, is exposed imagewise to actinic light, the exposed areas of the resist layer are subjected to selective thermal hardening and crosslinking, and the resist layer is post-exposed uniformly to actinic light and then washed out with an aqueous developer.

12. A process as claimed in claim 1, wherein, after washing out with the aqueous developer, thermal post-curing and subsequent crosslinking is also carried out.

13. A process as claimed in claim 1, wherein the solid photosensitive resist layer is laminated onto the base using pressure and/or heat.

14. A process as claimed in claim 13, wherein the photosensitive resist layer, before being laminated onto the base, is preexposed uniformly for a short time to actinic light, on that side which faces the base.

4,465,761

IMAGE-FORMING PHOTOSENSITIVE COMPOSITION

Yukio Takegawa; Akira Tukada; Susumu Suzuka, and Nobuyoshi Endo, all of Tokyo, Japan, assignors to Oriental Photo Industries Co., Ltd. and Hodogaya Chemical Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 187,898, Sep. 17, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,379

Claims priority, application Japan, Sep. 27, 1979, 54-123138; Oct. 31, 1979, 54-139772

Int. Cl.³ G03C 1/52

U.S. Cl. 430—341 **15 Claims**

1. An image-forming photosensitive composition consisting essentially of:

(a) 1.0 to 3.0 parts by weight of an organohalogen compound capable of forming a free radical by irradiation with light,

(b) 1.0 to 5.0 parts by weight of a substantially colorless dye which colors when it is contacted with an acidic substance, said dye being selected from the group consisting of phthalide dyes, xanthene dyes, phenothiazine dyes, lactam dyes and spiropyran dyes,

(c) 0.5 to 3.0 parts by weight of an aromatic amine and/or conjugated nitrogen-containing heterocyclic compound effective as a sensitizer or storage stability improving agent,

(d) 5.0 to 8.0 parts by weight of a binder, and

(e) 0.02 to 0.7 part by weight of an aliphatic amine, alicyclic amine and/or saturated heterocyclic amine effective to reduce the fog density on the non-image area and to improve the λ value.

4,465,762

METHOD FOR COLOR DEVELOPING COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Takatoshi Ishikawa; Takashi Nakamura, and Kotaro Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 3, 1982, Ser. No. 354,420

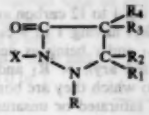
Claims priority, application Japan, Mar. 3, 1981, 56-30338

Int. Cl.³ G03C 7/16

U.S. Cl. 430—376 **11 Claims**

1. A method for forming a color image by the reaction of the oxidation product of a color developer with a color coupler upon color development, comprising color developing a color photographic silver halide light-sensitive material containing at least one compound represented by formula (I)

(I)



wherein X is a hydrogen atom or an acetyl group, R is an aryl group, and each of R_1, R_2, R_3, and R_4 is a hydrogen atom, an alkyl group, or an aryl group,

using a color developer containing a p-phenylenediamine based color developing agent selected from the group consisting of 4-amino-N,N-diethylaniline, 3-methyl-4-amino-N,N-diethylaniline, 4-amino-N-ethyl-N-β-hydroxyethylaniline, 3-methyl-4-amino-N-ethyl-N-β-hydroxyethylaniline, 3-methyl-4-amino-N-ethyl-N-β-methanesulfonamidoethylaniline, and 4-amino-3-methyl-N-ethyl-N-β-methoxyethylaniline and without performing black-and-white development.

4,465,763

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR IMAGES BY THE SILVER DYE BLEACH PROCESS

Eddy Forte, Lausanne; Mario Fryberg, Praroman-le-Mouret, and Gérald Jan, Fribourg, all of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

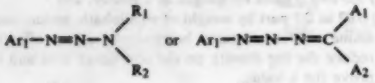
Division of Ser. No. 326,786, Dec. 2, 1981, Pat. No. 4,404,273. This application May 4, 1983, Ser. No. 491,614

Claims priority, application Switzerland, Dec. 15, 1980, 9248/80

Int. Cl.³ G03C 7/00

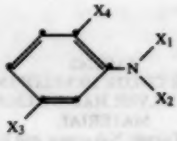
U.S. Cl. 430—462 **1 Claim**

1. A formulation for processing a photographic material for the production of photographic colour images by the silver dye bleach process, which process comprises the steps of imagewise exposure, silver development, dye formation, dye bleach, silver bleach and fixing of the photographic material and wherein said process steps, after the development of the image silver are carried out in acid processing solution which contains a phase transfer catalyst capable of transferring cations said photographic material comprising an opaque or transparent base, having thereon at least one silver halide emulsion layer and, in the same layer or in an adjacent layer, containing a dispersion of the oil-soluble triazine of the formula



(1) (2)

and an oil-soluble coupling component of the formula



(3)

in a water-insoluble solvent or solvent mixture in which Ar_1, is substituted or unsubstituted aryl or a substituted or unsubstituted aromatic heterocyclic radical, R_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 6 carbon atoms, $-(CH_2CH_2O)_r-L_1$ or $-OL_1$, in which L_1 is alkyl having 1 to 12 carbon atoms and r is 1, 2 or 3, or R_1 is substituted or unsubstituted aryl, hydroxyl or a radical of the formula

in which V is hydrogen or alkyl having 1 to 12 carbon atoms, R_2 is substituted or unsubstituted alkyl having 1 to 6 carbon atoms, $-(CH_2CH_2O)_r-L_1$, with L_1 and r being as defined above, or substituted or unsubstituted aryl, or R_1 and R_2, conjointly with the nitrogen atoms to which they are bonded, form a substituted or unsubstituted, saturated or unsaturated 5-membered, 6-membered or 7-membered ring which may contain a further hetero-atom, A_1 and A_2 independently of one another are an amino group of the formula

in which T_1 and T_2 independently of one another are hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms or substituted or unsubstituted aryl, X_1 and X_2 independently of one another are hydrogen or substituted or unsubstituted alkyl having 1 to 20 carbon atoms, X_3 is hydrogen, substituted or unsubstituted alkyl having 1 to 6 carbon atoms, substituted or unsubstituted alkoxy having 1 to 20 carbon atoms, $-O(C_2H_4O)_n-H$, $-O(CH_2)_m-OH$, $-O-(CH_2)_m-OZ_1$ or $-O-(C_2H_4O)_n-Z_1$, in which Z_1 is alkyl having 1 to 8 carbon atoms, n is an integer from 1 to 5, and m is 2, 3 or 4, or X_3 is substituted or unsubstituted aryloxy, hydroxyl, halogen, $-NHCO-Y_1$, $-NHCOH$, $-NHCO-OY_1$, $-NHP(O)-(OY_1)_2$ or $-NHSO_2-Y_1$, in which Y_1 is substituted or unsubstituted alkyl having 1 to 16 carbon atoms, $-O(CH_2)_m-OH$, $-O-(C_2H_4O)_n-H$, $-O-(CH_2)_m-OZ_1$ or $-O-(C_2H_4O)_n-Z_1$, with Z_1, m and n being as defined above, or Y_1 is substituted or unsubstituted aryl, and X_4 is hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms, $-O(C_2H_4O)_n-H$, $-O(CH_2)_m-OH$, $-O(CH_2)_m-OZ_1$ or $-O-(C_2H_4O)_n-Z_1$, with Z_1, m and n being as defined above, or X_4 is substituted or unsubstituted alkoxy having 1 to 16 carbon atoms, substituted or unsubstituted aryloxy or halogen, and the total of the carbon atoms in the substitutents, X_1, X_2, X_3 and X_4 is at least 10, said formulation containing (a) an alkyl or aryl sulfonic acid, sulfuric acid or sulphamic acid or mixtures thereof, (b) a compound selected from the group consisting of trichloroacetic acid, trifluoroacetic acid and perchloric acid as a proton phase transfer catalyst, optionally (c) a ligand which forms silver complexes, (d) a dye bleach catalyst, (e) an antioxidising agent, optionally (f) an oxidising agent and optionally (g) a solvent for silver halide.

4,465,764

USE OF PYROELECTRIC AND PHOTOVOLTAIC POLYVINYLIDENE FLUORIDE TO ENCHANCE THE PHOTOSENSITIVITY OF SILVER HALIDE EMULSIONS AND THE PRODUCTS MADE THEREBY

Luke R. Ocone, Springfield Township, Montgomery County, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 30, 1982, Ser. No. 428,982

Int. Cl.³ G03C 1/28

U.S. Cl. 430—496 **9 Claims**

1. A photosensitive member comprising:

(a) at least one photosensitive layer of a silver halide emulsion; and

(b) at least one sheet of poled polyvinylidene fluoride or copolymer or alloy polymer thereof in close proximity to said at least one photosensitive layer, said at least one sheet acting to produce a voltage across the at least one photosensitive layer during exposure of the at least one photosensitive layer, to increase the sensitivity of the at least one photosensitive layer as compared to the sensitivity of photosensitive layers without having said voltage produced by said at least one sheet thereacross.

4,465,765

COLORPHOTOGRAPHIC RECORDING MATERIAL

David G. Leppard, Marly, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

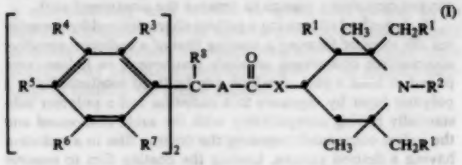
Filed Aug. 16, 1983, Ser. No. 523,411

Claims priority, application Switzerland, Aug. 18, 1982, 4938/82

Int. Cl.³ G03C 1/84, 7/26

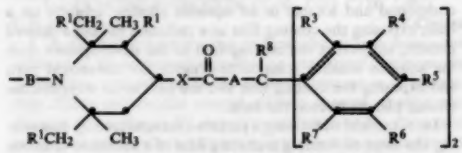
U.S. Cl. 430—512 **9 Claims**

1. A colourphotographic recording material which, in at least one light-sensitive silver halide emulsion layer, intermediate layer and/or protective layer, contains at least one polyalkylpiperidine compound as an optical stabiliser, wherein the optical stabiliser is a compound of the formula I

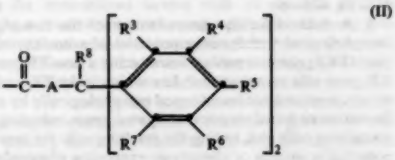


(I)

in which R^1 is hydrogen or methyl, R^2 is hydroxyl, C_1–C_{12}-alkyl, C_3–C_6-alkenyl, C_3–C_4-alkynyl, C_7–C_{12}-aralkyl, glycidyl, halogen-, cyano-, —COOR^9— or —CON(R^{10})(R^{11})-substituted C_1–C_4-alkyl, a —CO—R^{12}, —CO—OR^9 or —CO—N(R^{10})(R^{11}) group, a —CH_2—CH(R^{13})—OR^{14}, —SO—R^{15}, —SO_2—R^{15}, —OR^9 or —OOC—R^{12} group, or a group of the formula

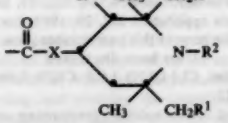


R^3 and R^5 are hydrogen or hydroxyl in such a way that either R^3 is hydrogen and R^5 is hydroxyl or R^3 is hydroxyl and R^5 is hydrogen, R^4 is C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl or C_7–C_9-phenylalkyl, R^6 and R^7, independently of each other, are hydrogen, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl or C_7–C_9-phenylalkyl, R^8 is hydrogen, C_1–C_{12}-alkyl, C_5–C_8-cycloalkyl, benzyl or phenyl, R^9 is C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, R^{10} is C_1–C_{12}-alkyl, allyl, cyclohexyl, benzyl, phenyl or C_7–C_{12}-alkylphenyl, R^{11} is hydrogen, C_1–C_{12}-alkyl, allyl, cyclohexyl or benzyl, or R^{10} and R^{11}, together with the N atom to which they are bonded, form a 5- or 6-membered heterocyclic ring, R^{12} is hydrogen, C_1–C_{12}-alkyl, C_2–C_6-alkenyl, chloromethyl, C_5–C_8-cycloalkyl, C_7–C_{12}-aralkyl, phenyl, C_7–C_{12}-alkylphenyl or phenyl, phenylmethyl or phenylethyl which is substituted by 1 or 2 C_1–C_4-alkyl groups and a hydroxyl group, R^{13} is hydrogen, C_1–C_4-alkyl, C_2–C_{13}-alkoxymethyl, phenyl or phenoxymethyl, R^{14} is hydrogen, C_1–C_{12}-alkyl, a —CO—R^{12} or —CO—N(R^{10})(R^{11}) group or a group of the formula II

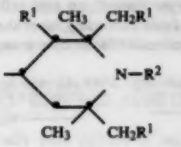


(II)

R^{15} is C_1–C_{12}-alkyl, phenyl or C_7–C_{12}-alkylphenyl, A is a direct bond or C_1–C_{12}-alkylene which can be interrupted by —S— or —COO— or be substituted by one of the groups —SO_2—R^{15}, —CN, —P(O)(OR^{15})$_2$ or



B is C_2–C_{12}-alkylene, C_4–C_8-alkenylene, C_4–C_6-alkynylene or C_8–C_{14}-aralkylene, and X is —O— or —N(R^{16})— in which R^{16} is hydrogen, C_1–C_{18}-alkyl, C_5–C_{12}-cycloalkyl or a group of the formula III



(III)

4,465,766

SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

Ryosuke Sato; Katsunori Kato; Takashi Sasaki, and Hiroshi Sugita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

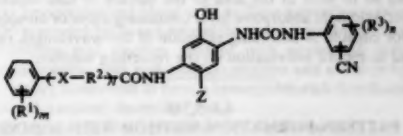
Division of Ser. No. 522,818, Aug. 12, 1983, which is a continuation of Ser. No. 385,096, Jun. 4, 1982, abandoned. This application Oct. 11, 1983, Ser. No. 540,719

Claims priority, application Japan, Jun. 11, 1981, 56-90334; Jun. 11, 1981, 56-90335; Jun. 11, 1981, 56-90336

Int. Cl.^{3} G03C *7/26*

U.S. Cl. 430—552 **1 Claim**

1. A silver halide photosensitive material for color photography which contains a phenol type cyan coupler having the formula



wherein

X is an oxygen atom or a sulfur atom;

R^2 is a straight or branched alkylene group; the —CN group is located at the 2- or 3-position to the ureido group;

R^3 is a hydrogen atom, a halogen atom or a monovalent organic group;

R^1 is a group selected from a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a heterocyclic group, an aralkyl group, an alkoxy group, an aryloxy group, a hydroxy group, an acyloxy group, a carboxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, a mercapto group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, an acyl group, an acylamino group, a sulfonamido group, a carbamoyl group and a sulfamoyl group;

Z is a hydrogen atom or a removable group upon coupling reaction with an oxidized product of a color developing agent,

n is 0 to 3;

m is 1 to 4; and

l is 0 or 1.

4,465,767

OPTICAL INFORMATION RECORDING MEDIUM

Hideaki Oba, and Masaakira Umehara, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,688

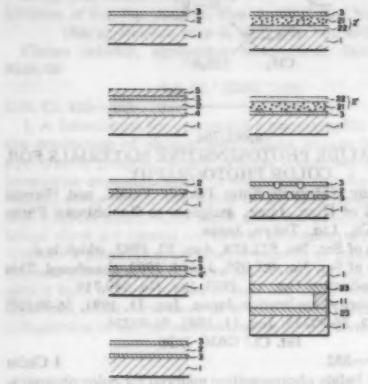
Claims priority, application Japan, Nov. 27, 1981, 56-189235; Nov. 27, 1981, 56-189236; Dec. 10, 1981, 56-197707; Dec. 10, 1981, 56-197708

Int. Cl.^{3} G03C *1/76*

U.S. Cl. 430—271 **16 Claims**

1. An optical information recording medium comprising a substrate which is transparent to a high density energy beam

and a recording layer superimposed on said substrate, said recording layer consisting of a reflective layer located on the side of said recording layer that is closest to said substrate and a light absorptive layer formed on said reflective layer and located on the side of said recording layer that is remote from said substrate, said reflective layer containing closely distributed therein metal particles having a particle diameter of 1500 Angstroms or less and wherein said metal particles occupy from 60 to 98% of the area of the surface of said reflective layer, said light absorptive layer containing a dye or oil-soluble color capable of absorbing radiation of the wavelength range used to record information on the recording medium.



4,465,768

PATTERN-FORMATION METHOD WITH IODINE CONTAINING AZIDE AND OXYGEN PLASMA ETCHING OF SUBSTRATE

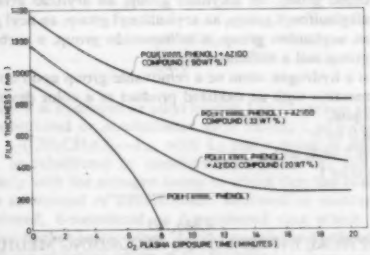
Takumi Ueno; Hiroshi Shiraishi, both of Hachioji; Takao Iwayanagi, Nerima; Takahiro Kohashi, Tsukui, and Saburo Nonogaki, Meguro, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,903

Claims priority, application Japan, Jul. 15, 1981, 56-109337; May 7, 1982, 57-75231

Int. Cl.³ G03F *7/26, 7/08, 7/10;* H01L *21/308*

U.S. Cl. 430—296 **19 Claims**


POLY VINYL PHENOL + AZIDO COMPOUND (50 WT %)
POLY VINYL PHENOL + AZIDO COMPOUND (33 WT %)
POLY VINYL PHENOL + AZIDO COMPOUND (20 WT %)
POLY VINYL PHENOL
FILM THICKNESS (nm)
O2 PLASMA EXPOSURE TIME (MINUTES)

1. A method of forming a pattern characterized by comprising the steps of forming a coating film of a radiation-sensitive composition comprising an iodine-containing azide compound at least a part of which can be fixed substantially in a polymer layer by exposure to a radiation and a polymer substantially having compatibility with the azide compound, exposing the coating film to a radiation having a desired pattern, heating the coating film to remove the azide compound from an unexposed region of the coating film and exposing the coating film to an oxygen-containing plasma to remove the unexposed part.

10. A method of forming a pattern characterized by comprising the steps of forming a coating film of a radiation-sensitive composition comprising an azide compound, an iodine compound at least a part of which can be fixed substantially in a polymer layer by exposure to a radiation and a polymer substantially having compatibility with the azide compound and the iodine compound, exposing the coating film to a radiation having a desired pattern, heating the coating film to remove the iodine compound from the unexposed region of the coating film and exposing the coating film to an oxygen-containing plasma to remove the unexposed part.

14. A method of forming a pattern characterized by comprising the steps of forming a coating film of a radiation-sensitive composition comprising an azide compound, an iodine compound at least a part of which can be fixed substantially in a polymer by exposure to a radiation and a polymer substantially having compatibility with the azide compound and the iodine compound and soluble in an aqueous alkaline solution on a base, exposing the coating film to a radiation having a desired pattern, subjecting the coating film to the development with the aqueous alkaline solution to remove the unexposed part, and exposing the coating film and the base to an oxygen-containing plasma to etch the base.

16. A method of forming a pattern characterized by comprising the steps of forming a coating film of a radiation-sensitive composition comprising an iodine-containing azide compound at least a part of which can be fixed substantially in a polymer by exposure to a radiation and a polymer substantially having compatibility with the azide compound and soluble in an aqueous alkaline solution on a base, exposing the coating film to a radiation having a desired pattern, subjecting the coating film to the development with the aqueous alkaline solution to remove the unexposed part, and exposing the coating film and the base to an oxygen-containing plasma to etch the base.

4,465,769

NON-TRANSFORMED THYMIDINE KINASELESS CELL LINE AND ITS USE FOR TESTING TUMORIGENIC POTENTIAL OF GENES

Berge Hampar, Middletown, and Stephen D. Showalter, Gaithersburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 11, 1981, Ser. No. 329,870

Int. Cl.³ C12Q *1/68, 1/29;* C12N *15/00, 5/00*

U.S. Cl. 435—6 **9 Claims**

1. A method for the determination of the tumorigenic or morphological transforming potential of a non-thymidine kinase (TK) gene comprising, introducing a non-TK gene and a TK gene into an animal cell line which lacks TK and is non-tumorigenic and not transformed morphologically by co-transformation or transformation of ligated genes, selecting for TK containing cells and, testing the resulting cells for tumorigenic potential in animals or phenotypic expression of morphological transformation in vitro.

4,465,770

STABILIZED ENZYMIC SOLUTIONS FOR DETERMINING UREA

Ivan E. Modrovich, 1043 Mesa Dr., Camarillo, Calif. 93010

Continuation of Ser. No. 074,544, Sep. 11, 1979, Pat. No. 4,282,316. This application Jul. 29, 1981, Ser. No. 287,907

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ C12Q *1/58;* C12N *9/96*

U.S. Cl. 435—12 **15 Claims**

1. A stabilized urease solution comprising essentially heavy metal ion-free water, urease enzyme present in an amount of about 25,000 IU/l±25 percent, a low-conductivity zwitterionic buffering agent present in an amount sufficient to main-

tain pH in the range of from about 5 to 9, a bacteriostat which is nondenaturing with respect to urease and present in an amount sufficient to inhibit bacteria growth, a chelating agent in an amount sufficient for complexing heavy metal ions, and a polyhydroxy organic compound present in an amount sufficient to stabilize the urease enzyme.

4,465,771

PRODUCTION OF ENDURACIDIN AND MICROORGANISMS THEREFOR

Ikuo Nogami; Hideo Shirafuji, both of Nagaokakyo, and Shigeo Matsumura, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 30, 1981, Ser. No. 316,901

Claims priority, application Japan, Oct. 31, 1980, 55-154393

Int. Cl.³ C12P *21/00*; C12N *15/00, 1/20*; C12R *1/465*

U.S. Cl. 435—68 12 Claims

1. A method for producing enduracidin, which comprises cultivating an enduracidin-producing mutant of *Streptomyces fungicidicus* and which has the abilty to excrete or to permeably diffuse enduracidin around colonies thereof on solid medium or has m-fluoro-DL-tyrosine-resistance or has these two properties, until enduracidin is substantially accumulated in the culture broth and then recovering the same.

4,465,772

METHOD FOR DISINFECTING AND WASHING OF IMMOBILIZED LACTASE

Hideo Hirohara, Ibaraki; Hidefumi Yamamoto, Takatsuki; Emiko Kawano, Osaka; Mamoru Hattori, Hekinan, and Hisao Yamaguchi, Anjo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 1, 1981, Ser. No. 307,578

Claims priority, application Japan, Oct. 6, 1980, 55-140176

Int. Cl.³ C12P *19/02*; C12N *11/08, 9/38*; A23C *21/02*

U.S. Cl. 435—105 23 Claims

1. A method comprising hydrolyzing lactose in a solution with an immobilized lactase prepared by the immobilization of the lactase derived from *Aspergillus oryzae*, then after a period of use, disinfecting and washing the immobilized lactase by treating the immobilized lactase with an aqueous solution containing a disinfectant and having a pH of 2 to 8.7 and then (a) washing the thus treated immobilized lactase with an acid aqueous solution of pH 2 to 4 and further treating the immobilized lactase with a phosphate buffered aqueous solution of pH 6 to 8.7, or (b) washing the thus treated immobilized lactase with a phosphate buffered aqueous solution of pH 6 to 8.7 and further treating the immobilized lactase with an acid aqueous solution of pH 2 to 4.

7. A method comprising hydrolyzing lactose in a solution with an immobilized lactase prepared by the immobilization of the lactase derived from Aspergillus oryzae, then after a period of use, disinfecting and washing the immobilized lactase by treating the immobilized lactase with an aqueous solution containing a disfectant and having a pH of 2 to 4 and then washing the thus treated immobilized lactase with a phosphate buffered aqueous solution of pH 6 to 8.7.

18. A method comprising hydrolyzing lactose in a solution with an immobilized lactase prepared by the immobilization of the lactase derived from Aspergillus oryzae, then after a period of use, disinfecting and washing the immobilized lactase by treating the immobilized lactase with an aqueous solution containing a disinfectant and having a pH of 2 to 4 and then disinfecting and washing the thus treated immobilized lactase with a disinfectant-containing aqueous solution of pH 6 to 8.7.

4,465,773

AMYLASE-NEGATIVE, ASPOROGENOUS MUTANT OF *BACILLUS SUBTILIS* USEFUL AS A HOST IN A HOST-VECTOR SYSTEM

Donald H. Dean, Worthington, and Daniel M. Ellis, Columbus, both of Ohio, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Apr. 21, 1982, Ser. No. 370,433

Int. Cl.³ C12N *1/20, 15/00*; C12R *1/125*

U.S. Cl. 435—253 2 Claims

1. A biologically pure culture of asporogenous *B. subtilis* EE101 (ATCC 39,096) suitable for use as a host component in a host-vector system characterized in that it contains no amylase-coding gene, has a frequency of reversion to spore formers of less than about 10^{-7} when grown under conditions of aeration and having the following genetic markers: thy A1, thy B1, pyr D1, spo OAΔ677, lin-2, amy-3, and aro-10.

4,465,774

STANDARD OR CONTROL MATERIAL FOR GLYSOCYLATED OR TOTAL HEMOGLOBIN DETERMINATION

John J. Huang, San Mateo; Jung-Shou Chen, Foster City, and Louis M. Mezei, Fremont, all of Calif., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jul. 16, 1981, Ser. No. 283,940

Int. Cl.³ C09K *3/00*; G01N *33/72, 33/96*

U.S. Cl. 436—15 18 Claims

1. A method of preparing a hemoglobin control material, said method comprising the steps of:

(a) hemolyzing red blood cells to form a reaction mixture;

(b) removing lipids and stroma from said reaction mixture by mixing said reaction mixture with an organic solvent immiscible with said reaction mixture and a first polyhydroxy compound to form a hemoglobin-rich first fraction, and a second fraction;

(c) separating said first and second fractions; and,

(d) removing residual organic solvent from said first fraction to obtain a hemoglobin-rich solution.

14. A method of preparing a hemoglobin control material, said method comprising the consecutive steps of:

(a) hemolyzing red blood cells by mixing said red blood cells with a detergent and a frist polyhydroxy compound to form a reaction mixture;

(b) mixing said reaction mixture with an organic solvent immiscible with said reaction mixture, and said first polyhydroxy compound to form a hemoglobin-rich first fraction and a second fraction immiscible with said first fraction;

(c) separating said first and second fractions;

(d) dialyzing said first fraction against an aqueous solution of a second polyhydroxy compound to obtain a hemoglobin-rich dialysate consisting essentially of hemoglobin, water and said second polyhydroxy compound; and,

(e) lyophilizing said dialysate to provide a dry hemoglobin control material which is suitable for reconstitution.

4,465,775

VITAMIN B_{12} AND LABELLED DERIVATIVES FOR SUCH ASSAY

Thomas M. Houts, London, England, assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 24, 1982, Ser. No. 381,267

Claims priority, application United Kingdom, Jun. 22, 1981, 8119147

Int. Cl.³ G01N *33/60, 33/82, 33/50*; C08G *77/04*

U.S. Cl. 436—503 14 Claims

10. A method of assaying vitamin B_{12} in a liquid sample which comprises forming a competitive binding mixture of the sample with intrinsic factor and a labelled derivative of vitamin B_{12}, and measuring the bound or free label and therefrom determining the vitamin B_{12} in the sample, wherein the labelled

derivative of vitamin B_{12} is prepared from the (d)-monocarboxylic acid isomer of vitamin B_{12} and comprises a labelled group bound to the (d)-carboxylic acid group, the derivative being free from other monocarboxylic acid isomers of vitamin B_{12} and derivatives thereof.

14. A substantially pure radioactively labelled derivative of vitamin B_{12} which can be used in a competitive binding assay for vitamin B_{12} to bind with intrinsic factor, the said derivative consisting of the product of reaction between the (d)-carboxylic acid group of the (d)-monocarboxylic acid isomer of vitamin B_{12} and a compound selected from tyramine, tyrosine methyl ester, histamine and histidine methyl ester, the said derivative including at least one ^{125}I atom substituent in the said compound.

4,465,776

MONOCLONAL ANTIBODIES TO VITAMIN B_6 AND IMMUNOASSAY METHOD

John A. Cidlowski, Chapel Hill, N.C., and Dace Viceps-Madore, Burlington, Vt., assignors to Research Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,760
Int. Cl.³ C07G 7/00
U.S. Cl. 436—504 **16 Claims**

9. A kit useful for the detection of vitamin B_6 in a sample which comprises:

a carrier being compartmentalized to receive one or more container means in close confinement therein,

a first container means comprising a murine monoclonal antibody of the IgG class which is specific for vitamin B_6;

a second container means comprising a detectably labeled antibody which is specific for vitamin B_6.

4,465,777

COMPOSITION AND METHOD FOR FORMING A PROTECTIVE COATING ON CARBON-CARBON SUBSTRATES

David M. Shuford, Grand Prairie, Tex., assignor to Vought Corporation, Dallas, Tex.

Continuation of Ser. No. 252,117, Apr. 8, 1981, abandoned. This application Dec. 28, 1982, Ser. No. 453,930
Int. Cl.³ C04B 35/56
U.S. Cl. 501—88 **39 Claims**

1. A composition for forming a coating for protecting a carbonaceous substrate from degradation at elevated temperatures comprising a mixture of:

(a) between about 25% and 40% particulate silicon by weight of the total composition;

(b) between about 50% and 70% particulate silicon carbide by weight of the total composition;

(c) between about 1% and 15% of particulate boron by weight of the total composition; and

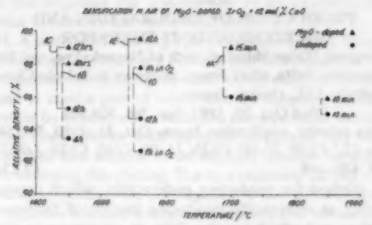
(d) a minor amount of particulate magnesium oxide for facilitating formation of the coating.

4,465,778

SINTERABLE FLUORITE OXIDE CERAMICS

Richard J. Brook, and Suxing Wu, both of Leeds, England, assignors to National Research Development Corporation, London, England

Filed Jan. 14, 1983, Ser. No. 457,871
Claims priority, application United Kingdom, Feb. 3, 1982, 8203113
Int. Cl.³ C04B 35/04, 35/48
U.S. Cl. 501—104 **22 Claims**



1. A composition of fluorite oxide sinterable in the solid state, comprising a fluorite oxide, which may be partly or fully stabilised, characterised in that it contains 0.05 to 0.15 mole % MgO and substantially no Al_2O_3.

4,465,779

MODIFIED CRACKING CATALYST COMPOSITION

Mario L. Occelli, Allison Park, and James V. Kennedy, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 6, 1982, Ser. No. 375,378
Int. Cl.³ B01J 21/16, 29/04
U.S. Cl. 502—63 **33 Claims**

1. A novel catalytic cracking composition comprising a cracking catalyst having high activity and, as a separate and distinct entity, a diluent selected from the group consisting of a magnesium compound and a magnesium compound in combination with a heat-stable metal compound, said diluent having a surface area of about 30 to about 1000 m^2/gram and a pore volume of about 0.05 to about 2.5 cc/gram.

13. The novel catalytic cracking composition of claim **1** wherein said diluent contains a magnesium compound and up to about 50 weight percent of a heat-stable metal compound.

27. The novel catalytic cracking composition of claim **1** wherein said cracking catalyst comprises from about ten to about 40 weight percent of a zeolite having cracking characteristics dispersed in a refractory metal oxide matrix.

4,465,780

PHOSPHORUS-CONTAINING CATALYST

Lloyd A. Pine, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 14, 1982, Ser. No. 434,201
Int. Cl.³ B01J 29/08, 21/16
U.S. Cl. 502—68 **35 Claims**

1. A catalyst comprising a crystalline alumino-silicate zeolite prepared from a clay starting material, a residue derived from said clay, and an effective amount of phosphorus, said catalyst having been prepared by the steps which comprise:

(a) ion exchanging a clay derived alkali metal-containing Y-type crystalline aluminosilicate zeolite and the clay derived residue with a cation other than an alkali metal to decrease the alkali metal content of said alkali metal-containing zeolite;

(b) calcining the resulting ion exchanged zeolite and clay derived residue, and

(c) contacting the resulting calcined zeolite and clay derived residue with an anion selected from the group consisting of a dihydrogen phosphate anion, a dihydrogen phosphite anion and mixtures thereof and with at least one ammonium salt othe than a salt of an inorganic acid of phosphorus for a time sufficient to composite said effective amount of phosphorus with said calcined zeolite and residue and to decrease additionally the alkali metal content of said zeolite.

4. The catalyst of claim 1 wherein said catalyst additionally comprises clay.

6. The catalyst of claim 1 wherein said catalyst comprises at least about 0.1 weight percent of said phosphorus, based on the weight of said zeolite plus residue.

4,465,781

HALOGENATED CATALYST FOR ETHYLENE POLYMERIZATION CONTAINING A TRANSITION METAL AND MAGNESIUM AND PROCESS FOR ITS PREPARATION

Geneviève Le Brasseur, Bully les Mines, France, assignor to Societe Chimique des Charbonnages-CdF Chimie, Paris, France

Filed Jul. 19, 1982, Ser. No. 399,242

Claims priority, application France, Jul. 20, 1981, 81 14053

Int. Cl.³ C08F 4/62, 4/64, 4/68

U.S. Cl. 502—104 **7 Claims**

1. A catalyst for the homopolymerization of ethylene and the copolymerization of ethylene with α-olefins, comprising at least one transition metal, M, selected from the group consisting of the metals of groups IVa to VIa of the Periodic Table; magnesium, Mg; and at least one halogen, X, wherein said catalyst has the general formula $M_nMg(OR)_{2-m}X_{m+4n}$, wherein R is an alkyl radical containing from 1 to 4 carbon atoms, $0<m<2$ and $0.05<n<1$ and the ratio m/n is within the range of 0.2 to 10.2.

3. A process for the preparation of a catalyst according to claim 1, comprising:

(a) reacting an organic acid halide, R'COX with a magnesium alcoholate, $Mg(OR)_2$, wherein R' is an alkyl group containing from 1 to 12 carbon atoms, R is an alkyl group containing from 1 to 4 carbon atoms, and the reactants have an atomic ratio such that $X/Mg<1$;

(b) washing the product obtained from step (a) with a solvent;

(c) reacting the product obtained from step (b), at a temperature between −10° and +150° C., with an excess of a transition metal halide wherein the transition metal is selected from the metals of groups IVa to VIa of the Periodic Table and wherein said transition metal is at its maximum valency; and

(d) washing and then drying the product obtained from step (c).

4,465,782

SUPPORTED TRANSITION METAL COMPOSITION

Ian D. McKenzie, Welwyn Garden City, England, assignor to Imperial Chemistry Industries PLC, London, England

Filed Aug. 6, 1982, Ser. No. 405,984

Claims priority, application United Kingdom, Aug. 7, 1981, 8124150

Int. Cl.³ C08F 4/62, 4/64, 4/68

U.S. Cl. 502—104 **11 Claims**

1. A process for the production of a supported transition metal composition wherein a solid support material which is a metal halide is suspended in a liquid medium which is a liquid hydrocarbon or a liquid halohydrocarbon, the suspension is spray-dried, the spray-dried support material is collected and the collected spray-dried support material is contacted with at least one compound of a transition metal of Group IVA, VA, or VIA of the Periodic Table.

4,465,783

SPRAYING SOLID

Ian D. McKenzie, Welwyn Garden City, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 6, 1982, Ser. No. 405,983

Claims priority, application United Kingdom, Aug. 7, 1981, 8124147; Aug. 7, 1981, 8124153; Nov. 23, 1981, 8135235

Int. Cl.³ C08F 4/62, 4/64, 4/68

U.S. Cl. 502—105 **11 Claims**

1. A process wherein a solid material is mixed with a liquid medium which is a liquid hydrocarbon, a liquid halohydrocarbon, a liquid compound of a transition metal of Group IVA to VIA of the Periodic Table, or a solution of a compound of a transition metal of Group IVA to VIA of the Periodic Table in a liquid hydrocarbon or liquid halohydrocarbon, the mixture of the solid material and the liquid medium is subjected to mechanical action to cause a reduction in particle size of the solid material, the resulting mixture is spray-dried and the spray-dried solid material is collected, wherein either

(1) the solid material is at least one compound of a transition metal of Group IVA, VA or VIA of the Periodic Table or contains at least one compound of a transition metal of Group IVA, VA or VIA of the Periodic Table, or

(2) the solid material is a metal halide which is free of any compound of a transition metal of Group IVA, VA, or VIA of the Periodic Table and after being subjected to the mechanical action, and before or after spray drying, the metal halide is contacted with at least one compound of a transition metal of Group IVA, VA or VIA of the Periodic Table.

4,465,784

HYDROTREATMENT CATALYST

José M. Larrauri; Beatriz C. Arias, and Roberto E. Galiasso, all of Los Teques, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation-in-part of Ser. No. 394,840, Jul. 2, 1982. This application Aug. 23, 1983, Ser. No. 525,624

Int. Cl.³ B01J 20/30, 21/04, 21/06

U.S. Cl. 502—242 **12 Claims**

1. A method for producing a catalyst for use in the conversion of heavy hydrocarbons to light ones by the thermal and chemical treatment of a natural occuring material characterized by an element composition comprising aluminum, iron, silicon, magnesium and titanium comprising the steps of treating said natural occurring material with air and steam at a temperature of from about 300° to 900° C. for about 1 to 36 hours at a partial pressure of steam of from about 20 to 700 mmHg and further treating the heated and steamed natural occurring material with H_2+H_2S at a temperature of from about 200° to 500° C. for about 1 to 12 hours at a pressure of H_2S of from about 20 to 450 mmHg whereby elemental migration occurs between the surface and bulk of the material such that the chemical composition on the surface of the material is changed thereby improving catalytic activity.

4,465,785

COMPOSITION PRODUCTION AND USE

John W. Kelland, Bedfordshire, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 26, 1982, Ser. No. 444,364

Claims priority, application United Kingdom, Dec. 17, 1981, 8138051; Jul. 16, 1982, 8220694

Int. Cl.³ C08F 4/64

U.S. Cl. 502—105 **11 Claims**

1. A process for the production of a titanium containing composition which process comprises grinding at a temperature which does not exceed 100° C., a magnesium halide, with at least one compound of the formula

$AO_aX_{(b-2a)}$

and a Lewis Base compound and, during or subsequent to such grinding, contacting titanium tetrachloride, or a titanium tetrachloride-containing material, with the materials being ground or the product of grinding wherein

A is a carbon or sulphur atom;

X is a halogen atom;

a has a valve of 1 or 2 and 2a has a value which is less than the valency of A;

and

b is equal to the valency of A.

4,465,786

CATALYST COMPOSITION FOR THE PREPARATION OF 3,3,3-TRIFLUOROPROPENE

Mark F. Zimmer, Clifton Park; William E. Smith, Schenectady, and Donald F. Malpass, Jr., Waterford, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,267

Int. Cl.³ B01J *27/12*

U.S. Cl. 502—169 **8 Claims**

1. A catalyst composition for promoting fluorination of a halogenated hydrocarbon by vapor-phase reaction with hydrogen fluoride comprising a chromium oxyfluoride compound prepared by simultaneous fluorination of an intimate admixture of chromium trioxide and alumina and activated by contact with an activating agent selected from the group consisting essentially of chlorine and pentachloroethane.

4,465,787

RUTHENIUM-ON-CHARCOAL AND RUTHENIUM-ON-CARBON BLACK HYDROGENATION CATALYSTS, THEIR PREPARATION AND THEIR USE FOR SELECTIVE HYDROGENATION OF UNSATURATED CARBONYL COMPOUNDS

Michael Horner, Neustadt, and Matthias Irgang, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,781

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130805

Int. Cl.³ B01J *23/89, 23/46;* **C07C** *29/14;* **C07B** *1/00*

U.S. Cl. 502—185 **10 Claims**

6. A charcoal or carbon black catalyst prepared by a process comprising:

impregnating said charcoal or carbon black catalyst with ruthenium compound;

modifying the ruthenium-impregnated catalyst in the dried state by mixing with the powder of an iron compound; and reducing said iron modified catalyst with hydrogen at 400° C. to 600° C. with thorough mixing.

7. A charcoal or carbon black catalyst as claimed in claim 6, wherein the content of ruthenium is between 0.1 and 10% by weight.

8. A charcoal or carbon black catalyst as claimed in claim 6 wherein the content of iron is between 0.1 to 5% by weight.

4,465,788

OLEFIN OLIGOMERIZATION WITH AN ACTIVATED CATALYST

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 10, 1982, Ser. No. 416,790

Int. Cl.³ B01J *27/02, 37/12*

U.S. Cl. 502—217 **5 Claims**

1. A method for activating a catalyst consisting of nickel sulfate associated with a porous, refractory, inorganic oxide, which consists essentially of:

(a) contacting said catalyst with a gas containing free oxygen at a temperature in the range from about 750° F. to about 1150° F. for at least 2 hours; and

(b) contacting the resulting catalyst with an inert gas at a temperature of about 350° F. to about 750° F. for at least 1 hour.

4,465,789

HYDROTREATING CATALYST SUPPORT HAVING DUAL PORE STRUCTURE

John F. Lindsley, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 4, 1983, Ser. No. 481,701

Int. Cl.³ B01J *21/04, 21/12, 23/88*

U.S. Cl. 502—255 **5 Claims**

1. Catalyst for hydrotreating of oils which contain metal contaminants, for catalytic hydrodesulfurization or hydrodenitogenation of said oil and also for removal of at least some of the metal from the oil, said catalyst comprising at least one catalytic metal selected from group VIB and at least one catalytic metal selected from group VIII of the periodic table, the support for said catalytic metals comprising (1) a core of alumina or alumina and silica material having pore size distribution to provide at least about 70% of the total pore volume of said core material in pores having diameters less than 100 Å, and (2) a rind of alumina or alumina and silica material surrounding said core, said rind material having a pore size distribution to provide at least 25% of the total pore volume in pores having diameters greater than 1000 Å.

4,465,790

HYDROTREATING CATALYST

William H. Quayle, Shelton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 17, 1983, Ser. No. 476,168

Int. Cl.³ B01J *21/04, 21/06, 23/88*

U.S. Cl. 502—309 **2 Claims**

1. Hydrodenitrogenation catalyst comprising catalytic molybdenum and nickel on a catalyst support consisting essentially of co-precipitated alumina and titania with an amount of titania in the support sufficient to constitute more than 5% of the catalyst weight of a finished hydrodenitrogenation catalyst made on said support.

4,465,791

PROCESS FOR PREPARING POLYOL-CATALYST MIXTURES USEFUL IN THE PREPARATION OF RIGID POLYURETHANE CELLULAR PRODUCTS

Howard P. Klein, Houston, and George P. Speranza, Austin, both of Tex., assignors to Texaco Inc. (parent), White Plains, N.Y.

Division of Ser. No. 335,947, Dec. 30, 1981, Pat. No. 4,404,121. This application Aug. 4, 1983, Ser. No. 497,380

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—115 **5 Claims**

1. A process for preparing cellular polyurethane products by reacting the polyol-catalyst mixture prepared by a process which comprises heating a Mannich base compound with water and an epoxide and subsequently removing the water from the reaction mixture, said Mannich based compound being the reaction product of a phenol, an alkanolamine and formaldehyde with a polyisocyanate and a volatile blowing agent.

4,465,792

PROCESS FOR PRODUCING FLEXIBLE POLYESTER FOAM

Donald G. Carr, Chicago; John M. Blonn, Bolingbrook, and Leonard E. Milawski, Carol Stream, all of Ill., assignors to Standard Oil Company, a corporation of Indiana, Chicago, Ill.

Filed Jun. 24, 1982, Ser. No. 391,514
Int. Cl.³ C08J 9/00
U.S. Cl. 521—138 8 Claims

1. A process for producing flexible unsaturated polyester foams comprising mixing Components A and B, each of said Components comprising an unsaturated flexible polyester having an elongation of 8 to 70 percent, an unsaturated cross-linking monomer, a compound which releases carbon dioxide when contacted with an acid, an initiator, and an accelerator, wherein the accelerator in Component A is relatively inactive with the initiator in Component A but relatively active with the initiator in Component B and the accelerator in Component B is relatively inactive with the initiator in Component B but relatively active with the initiator in Component A, adding an acid to said mixture and allowing said mixture to foam and gel.

4,465,793

AROMATIC POLYESTER POLYCARBONATE POLYOLS DERIVED FROM POLYETHYLENE TEREPHTHALATE RESIDUES

Michael E. Brennan, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 5, 1983, Ser. No. 491,695
Int. Cl.³ C08G 18/14
U.S. Cl. 521—172 11 Claims

1. Aromatic polyester polycarbonate polyols prepared by the process comprising

reacting a residue from the manufacture of polyethylene terephthalate with a carbonating agent selected from the group consisting of alkylene carbonates and the combination of alkylene oxides with carbon dioxide in the presence of a polycarbonate formation catalyst, to produce aromatic polyester polycarbonate polyols.

4,465,794

HYDROPHILIC POLYMERS AND CONTACT LENSES THEREFROM

Petr Kuzma, 1708 Westminster Blvd., Parlin, N.J. 08859

Division of Ser. No. 216,434, Dec. 15, 1980, Pat. No. 4,328,148, which is a division of Ser. No. 61,466, Jul. 29, 1979, Pat. No. 4,275,183. This application Feb. 4, 1982, Ser. No. 345,801
Int. Cl.³ C08L 33/14
U.S. Cl. 523—106 10 Claims

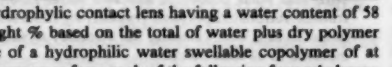
1. A hydrophylic contact lens having a water content of 58 to 80 weight % based on the total of water plus dry polymer and made of a hydrophilic water swellable copolymer of at least one monomer from each of the following four subclasses:

(1) at least 35% hydroxy (C_2–C_4 alkyl)2-alkenoate,

(2) 30 to 60% of a 2-alkenamide or an N,N-di)C_1–C_6 alkyl)2-alkenamide,

(3) 5 to 20% R—$OR_1)_xZ$ where R is C_1–C_6 alkyl, wherein R_1 is C_2–C_4 alkylene, wherein x is an integer from 1 to 4 and wherein Z is 2-alkenoyloxy,

(4) 0.3 to 5% of a polyethylenically unsaturated cross-linking agent having the formula



where R_2 and R_3 are hydrogen or lower alkyl, n is an integer of 2 to 4 and y is an integer of 2 to 9.

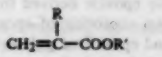
4,465,795

ANTIFOULING COATING COMPOSITION

Katsuaki Sunano, Nagoya, and Yukio Matsuda, Ohtake, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1982, Ser. No. 454,707
Claims priority, application Japan, Jan. 12, 1982, 57-3076
Int. Cl.³ C08L 33/08, 33/10
U.S. Cl. 523—122 10 Claims

1. Antifouling coating composition comprising an antifouling agent dissolvable in sea water carried in a solution of sea water insoluble polymer of 100–80% by weight of at least one monomer represented by the formula:



(I)

wherein R is hydrogen or methyl group and R' is hydrogen or alkyl group having 1–12 carbon atoms and 0–20% by weight of a vinyl monomer copolymerizable therewith, said polymer having a glass transition temperature of −30° C. to 0° C. and having a weight average molecular weight falling in the range of 20,000–200,000.

4,465,796

FRICTION LINING SUITABLE FOR USE IN BRAKES, CLUTCHES AND OTHER APPLICATIONS

Pierre Leroy, Saint Mande, and Michel Pilache, Beauchamp, both of France, assignors to Valeo, Paris, France

Filed Feb. 1, 1983, Ser. No. 463,052
Claims priority, application France, Feb. 5, 1982, 82 01868
Int. Cl.³ C08K 3/22
U.S. Cl. 523—153 19 Claims

1. A friction lining, suitable for brakes, clutches and other applications, comprising mineral fibres which contain substantial amounts of Al_2O_3, SiO_2 and CaO, wherein the said fibres have an overall percentage by weight of CaO of between 23% and 33%, the proportion by weight of the said mineral fibres in the friction lining being between 10% and 55%.

4,465,797

REINFORCED POLYMER COMPOSITIONS AND THEIR PREPARATION

Thomas F. Brownscombe, Amsterdam, Netherlands, and Frank D. Mango, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 15, 1983, Ser. No. 514,076
Int. Cl.³ C08K 9/04
U.S. Cl. 523—216 6 Claims

1. A method for preparing a reinforced polymer composition which comprises:

(a) contacting a particulate or filamentary silicate mineral with an organic diisocyanate in the presence of a material which will catalyze the formation of the covalent link between the mineral surface and the diisocyanate, and

(b) admixing the resulting isocyanate-modified mineral with an epoxy resin.

4,465,798

WATER-DILUTABLE EPOXIDE, PROCESS FOR PREPARING IT, THE USE THEREOF AND A COATING COMPOSITION

Gerd Walz, Wiesbaden; Thaddäus Wirth, Heidenrod-Wisper, and Walter Sprenger, Dieburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,573

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109900

Int. Cl.[3] **C08G** *59/04, 59/08;* **C08L** *63/04, 63/10*

U.S. Cl. 523—414 **14 Claims**

1. A water-dilutable epoxide derived from a substance selected from the group consisting of epoxidized fatty acids, derivatives thereof and epoxidized polyolefins and being free from glycidyl ester and glycidyl ether groups and containing at least one epoxide group, at least one ester group of a monocarboxylic acid or of a polycarboxylic acid, the latter ester groups not exceeding 50% of the total amount of ester groups thus derived from monocarboxylic acids and polycarboxylic acids and a further ester group being vicinally arranged thereto, which further ester group has been formed by reaction of an OH-group with a polycarboxylic monoanhydride, wherein the second COOH-group which has been formed from the anhydride by the esterification is at least partially present in the form of a salt of a base selected from the group consisting of tertiary amines and inorganic bases, the said further ester groups being present in an amount of up to 50% referred to the sum of these ester groups and the remaining free epoxide groups, thus at least 50% of the original epoxy groups still being unchanged and the proportion of the base in the modified epoxide being in the range from 0.1 to 15% by weight based on the reaction product which has not been converted into a salt.

13. An aqueous coating system containing an epoxide as claimed in claim 1 as a stabilizer in an aqueous polymer dispersion prepared wholly or partly from chlorine-containing monomers or as a stabilizer of the pH in aqueous solutions or dispersions of binders with saponifiable groups.

4,465,799

LOW FRICTION SLIDE LINING COMPOSITION AND A METHOD OF PRODUCING THE SLIDE LINING COMPOSITION

Leonard Platkiewicz; Wlodzimierz Debski, and Jerzy Glowacki, all of Pozna/, Poland, assignors to Osrodek Badawczo-Rozwojowy Stosowania i Obrobki Tworzyw Sztucznych Proplast, Poznan, Poland

Filed Dec. 9, 1982, Ser. No. 448,182

Claims priority, application Poland, Dec. 19, 1981, 234346

Int. Cl.[3] **C08L** *63/02*

U.S. Cl. 523—457 **4 Claims**

1. A low-friction, slide lining composition applied in the production of slide elements and surfaces of machines and equipment, containing epoxy resin and fillers, hardened with the known cross-linking agents of epoxy resins, comprising 100 parts by weight of low-molecular epoxy resin on the basis of epichlorohydrin and dian, condensed with 3–15 parts by weight of phenol-formaldehyde resin modified with furfuryl alcohol, 2–15 parts by weight of an organic diluent and 15–100 parts by weight of the known inorganic fillers selected from the group consisting of titanium white, talcum, lithophone, graphite, molybdenum disulfide, aluminum hydroxide, porcelain flour and mixtures thereof.

4,465,800

INK COMPOSITION FOR INK JET PRINTING

Yog R. Bhatia, Glen Ellyn, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Mar. 10, 1983, Ser. No. 474,173

Int. Cl.[3] **C09D** *3/54, 3/56;* **C08L** *61/10*

U.S. Cl. 524—236 **7 Claims**

1. An ink composition for use in ink-jet printing consisting essentially of:

(a) 2 to 30% by weight of a phenolic resole resin prepared by condensation of phenol and formaldehyde in the presence of an excess of formaldehyde

(b) 0.2 to 7.5% by weight of a soluble triarylmethane basic dye;

(c) 0.02 to 5% by weight of a soluble organic amine salt;

(d) 0 to 50% by weight of at least one evaporation retardant;

(e) up to 30% by weight of water;

and the balance being at least one C_1 to C_3 alkanol as a solvent; said ink composition having a specific resistivity of 50 to 3000 ohm-cm, a viscosity at 20° C. of 0.5 to 30cp, and a sonic velocity of 900 to 2000 meters per second.

6. A composition as defined in claim 1 which includes, as a solvent, up to 50% by weight, based on the weight of the composition, of a lower aliphatic ketone and up to 1% by weight of dimethylamine hydrochloride to reduce the resistivity of the composition.

4,465,801

INTERFACIAL VISCOSIFICATION OF AQUEOUS SYSTEM UTILIZING SULFONATED IONOMERS

Dennis G. Peiffer, East Brunswick; Robert D. Lundberg, Bridgewater, both of N.J., and Thad O. Walker, Humble, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 3, 1982, Ser. No. 374,197

Int. Cl.[3] **C08K** *5/05*

U.S. Cl. 524—389 **19 Claims**

1. A process for forming a thickened aqueous fluid having a viscosity of at least about 50 cps which consisting essentially the steps of:

(a) forming a solvent system of an organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 weight percent of said solvent system, a viscosity of said solvent system being less than about 100 cps;

(b) dissolving a water insoluble, unneutralized or neutralized sulfonated polymer in said solvent system to form a solution, a concentration of said unneutralized or neutralized sulfonated polymer in said solution being about 0.01 to less than 0.4 weight percent, a viscosity of said solution being less than about 200 cps; and

(c) adding about 5 to about 500 volume percent water to said solution, said water being immiscible with said solution, with said polar cosolvent and said water insoluble, neutralized sulfonated polymer transferring from said organic liquid to said water causing the viscosity of said water to increase to at least 50 cps.

3. A process according to claim 1, wherein said unneutralized or neutralized sulfonated polymer has about 10 (free acid) to about 100 (10.4 mole % sulfonation) meq. of sulfonate groups groups per 100 grams of polymer.

4,465,802

PROCESS FOR TREATING FURRED ANIMAL PELTS AND/OR FUR

William M. Dennen, Ringwood, N.J., and Mary E. Turney, Briarcliff Manor, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 26, 1982, Ser. No. 436,669

Int. Cl.[3] **A61K** *7/06*

U.S. Cl. 524—395 **12 Claims**

1. A process for treating furred animal pelts and/or fur comprising applying to said pelts or fur an aqueous composi-

tion containing a water-soluble cationic polymer and a cationic surfactant, wherein said pelts or fur are soaked in a dilute solution of said composition for a time sufficient to produce a pelt or fur with a finished dried fur having a smooth, controlled appearance, soft feel and improved sheen, and a treated skin remaining supple and retaining a soft feel.

4,465,803

AQUEOUS EMULSION COMPOSITION

Yasuharu Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Dec. 24, 1980, Ser. No. 220,086

Claims priority, application Japan, Dec. 29, 1979, 54-172054; Feb. 1, 1980, 55-10014

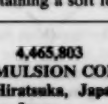
Int. Cl.³ C08F 2/16

U.S. Cl. 524—460 **12 Claims**

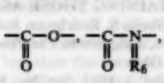
1. An aqueous emulsion composition which is the product of emulsion polymerization of at least one radical-polymerizable unsaturated monomer in the presence of a water-soluble resin having a graft-polymerizable unsaturated group in the side chain in water or a mixture consisting essentially of water and a water-miscible organic solvent, said water-soluble resin being a water-soluble resin formed by

(A) co-polymerizing

(i) a monomer containing one radical-polymerizable unsaturated group of the formula



wherein R_4 is hydrogen or methyl, and R_5 is



a phenylene group or a lower alkenylene group, wherein R_6 is hydrogen, methyl or ethyl,

and at least one graft-polymerizable unsaturated group in one molecule,

(ii) an α,β-ethylenically unsaturated acid, and/or a monoester between a polyalkylene glycol and acrylic or methacrylic acid, and

(iii) another radical-polymerizable unsaturated monomer having a Q value, in the Q-e theory, of at least 0.1, and

(B) neutralizing the resulting copolymer in the presence of the radical-polymerizable unsaturated monomer.

4,465,804

MULTICOMPONENT THERMOPLASTIC POLYMER BLENDS

Ian W. Sorensen, Bloomfield Hills, Mich., assignor to Allied Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 411,922, Jun. 28, 1982. This application Feb. 2, 1984, Ser. No. 576,070

Int. Cl.³ C08L 53/00, 75/00, 67/00; C08J 3/20

U.S. Cl. 524—505 **16 Claims**

1. A thermoplastic polymer blend comprising:

a least one dissimilar thermoplastic resin having Newtonian rheological behavior and a determinable viscosity at a blending temperature;

at least one other polymer having Newtonian rheological behavior at low shearing frequencies loaded with a predetermined quantity of particulates, said preloaded other polymer shear stress blended with said at least one dissimilar thermoplastic resin at said blending temperature and with a predetermined shear stress to form at least partially continuous interpenetrating network with each other, said predetermined quantity of particulates selected to impart to said other polymer a Non-Newtonian rheological behavior having a viscosity approximately equal to said determinable viscosity at said blending temperature and said predetermined stress rate.

4,465,805

CURABLE MASSES PRODUCING FLUOROSILICONE ELASTOMERS AND COATINGS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 23, 1983, Ser. No. 565,073

Int. Cl.³ C08K 5/02

U.S. Cl. 524—765 **32 Claims**

1. A curable mass comprising the combination of:

(A) the reaction product of

(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, wherein R represents a monovalent hydrocarbon radical, and the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1, and

(ii) a polyorganohydrogensiloxane;

(B) a polydiorganosiloxane having the formula

$$R''R'_2SiO(R'_2SiO)_x(R'QSiO)_ySiR'_2R'',$$

wherein

Q represents a radical having the formula

$$CF_3(C_mF_{2m})_q(CH_2)_n—,$$

m, n, and q each having a value of from 0 to 5 inclusive,

R' represents a monovalent hydrocarbon radical,

R'' is selected from the group consisting of R' radicals, Q radicals, vinyl radicals and hydroxyl radicals, there being at least one radical per molecule selected from the group consisting of vinyl radicals and hydroxyl radicals,

x has a value of from 0 to 7000,

y has a value of from 2 to 5000; and

(C) a catalytically effective amount of a catalyst.

4,465,806

UNSATURATED POLYESTER MOLDING COMPOUNDS WITH IMPROVED RESISTANCE TO THERMAL AND HUMID AGING

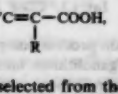
Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 299,787, Sep. 8, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 466,859

Int. Cl.³ C08L 63/10, 67/06

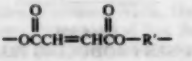
U.S. Cl. 525—31 **8 Claims**

1. A resin molding composition free of volatile vinyl monomer with a boiling point no more than 175° C. having improved aging properties after curing admixed only with a peroxide as curing agent consisting essentially of (1) 60–95 percent by weight of an unsaturated polyester having a weight average molecular weight of 500 to 50,000 and (2) 5–40 percent by weight of a crosslinker, said percentages being based on the combined weight of said polyester and said crosslinker, said crosslinker comprising the reaction product of a polyepoxy compound and an unsaturated monocarboxylic acid having the formula



wherein the R group is selected from the class consisting of hydrogen, methyl and halogen, and R''' is hydrogen or a hydrocarbon radical having 1–30 carbon atoms, said reaction product having 5–40 percent of the original epoxy radicals remaining still unreacted at the time of addition of said cross-

linker to said polyester and said unsaturated polyester having a repeating unit formula:



in which R′ is a divalent hydrocarbon radical.

4,465,807

PROCESS FOR THE PREPARATION OF REINFORCED RUBBER VULCANIZATES AND USE THEREOF

Arnold Giller, Taunusstein, and Joachim Weil, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 269,477, Jun. 2, 1981, abandoned, which is a continuation of Ser. No. 098,765, Nov. 30, 1979, abandoned. This application Aug. 30, 1983, Ser. No. 527,740

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852311

Int. Cl.³ C08L *61/10, 9/06*

U.S. Cl. 525—135 **10 Claims**

1. A process for the preparation of reinforced vulcanizates which comprises vulcanizing a mixture comprising rubber, sulfur as a vulcanization agent in conjunction with a conventional accelerator and a novolak as a reinforcing material in conjunction with at least one reactive melamine resin obtained by reaction of one mol of melamine with 0.5 to 6 mols of aldehyde, said melamine resin being present in an amount of from 1 to 80% by weight based on the weight of the novolak resin, the novolak resin being present in the final composition in an amount of from 1 to 30% by weight based on the rubber, and the phenolic component of said novolak resin being selected from the group consisting of phenol, bisphenols, alkylphenols and, a combination of alkylphenols with phenol having a content of at most 70 mol % of alkyl phenol, and the rubber being derived from components free of carbonyl groups.

4,465,808

POLYESTER/CARBOXY-RUBBER MOLDING COMPOSITION CONTAINING POTASSIUM UNSATURATED-HYDROCARBYL ORTHOPHOSPHATE

James S. Dix, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1983, Ser. No. 507,402

Int. Cl.³ C08L *67/06*; C08K *5/05, 5/52*

U.S. Cl. 525—170 **17 Claims**

1. A thermosetting composition comprising:
(a) an unsaturated polyester,
(b) a solid carboxy-containing rubbery diene polymer,
(c) a vinyl monomer, and
(d) a potassium unsaturated-hydrocarbyl orthophosphate ester.

4,465,809

CONVERSION OF POLYMER LITHIUM TO POLYMER CARBOXYLATE

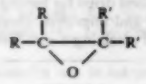
Richard L. Smith, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 5, 1982, Ser. No. 439,508

Int. Cl.³ C08F *8/46*

U.S. Cl. 525—284 **15 Claims**

1. A polymerization process comprising:
introducing an organolithium initiator into a reaction zone containing a hydrocarbon solvent; introducing a conjugated diene monomer having 4 to 8 carbon atoms per molecule into said reaction zone and carrying out polymerization;
thereafter introducing an epoxy compound and mixing the resulting ingredients at a temperature of 30° to 200° C., said epoxy compound having the formula



wherein each R and each R′ is selected from the group consisting of hydrogen, alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals and one R and one R′ can together form an alkylene radical; thereafter directly contacting the thus formed intermediate with a cyclic acid anhydride and mixing at a temperature of 30° to 200° C., said cyclic acid anhydride having the formula

wherein R″ is a divalent hydrocarbyl radical of 2 to 14 carbon atoms; subjecting the resulting composition to steam stripping or precipitation in the presence of an acid, to produce a carboxy containing rubbery polymer.

4,465,810

AGENTS FOR PREPARING CROSS-LINKED POLYMERS AND WATER-BASED PAINT COMPOSITIONS CONTAINING THOSE AGENTS

Dennis C. Toepker; Sheila S. Rodriguez, and Joel I. Shulman, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 1, 1982, Ser. No. 394,076

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—285 **14 Claims**

1. A water-soluble agent for preparing cross-linked polymers, comprising:
(a) a major portion of a polymer selected from the group consisting of polyacrylates and, polymethacrylates, having a molecular weight of from about 1,000 to about 20,000, this portion constituting the backbone of said agent;
(b) a minor portion of mono- or disubstituted cross-linking groups pendant from said backbone, with the unsaturated substituents on the groups being unpolymerized, said groups having polymerization rate constants between about 10×10^{-4} and 1000×10^{-4} mole^{-1} liter^{1} minute $^{-1}$ at 70° C.; and
(c) a minor portion of water-solubilizing groups pendant from said backbone, said groups selected from the group consisting of the half esters of maleic acid, succinic acid, itaconic acid, phthalic acid, fumaric acid, 5-norbornene-2,3-dicarboxylic acid, citraconic acid, glutaric acid, and mixtures thereof;
wherein the ratio, by weight, of pendant water-solubilizing groups to polymer backbone is from about 0.02:1 to about 1:1.

4,465,811

AROMATIC HYDROCARBON RESINS CONTAINING VINYLKETONE GROUPS AND POLYMERS THEREOF

Hacene Mehalla, Strasbourg, France, assignor to Societe Chimique des Carbonnages S.A., Paris la Defense, France

Filed May 26, 1982, Ser. No. 382,315

Claims priority, application France, May 26, 1981, 81 10433

Int. Cl.³ C08F *8/00, 32/00, 12/08*

U.S. Cl. 525—249 **20 Claims**

1. An acylated aromatic hydrocarbon resin, substantially

devoid of gel formation, having a number average molecular weight of about 2,000 to 6,000, and consisting essentially of an aromatic hydrocarbon polymerizate acylated with vinyl ketone groups of the formula:

$$RR'C{=}CR''{-}CO{-}$$

wherein R,R' and R'' each independently represent hydrogen, methyl, ethyl, n-propyl, isopropyl or halogen, the proportion of said vinyl ketone groups being about 0.02 to 0.07 vinyl ketone group per aromatic nucleus; wherein said aromatic hydrocarbon polymerizate has a number average molecular weight of about 500 to 2,500, and is formed from a mixture of hydrocarbons comprising 1–30 mol % styrenes, 9–60 mol % vinyltoluenes, and 10–90 mol % indenes.

4,465,812

LINEAR MEDIUM- OR LOW-DENSITY POLYETHYLENE COMPOSITION

Kisoo Moriguchi, and Isaburo Fukawa, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 427,202
Claims priority, application Japan, Oct. 23, 1981, 56-168725
Int. Cl.³ C08F *8/00*
U.S. Cl. 525—333.8 **6 Claims**

1. A modified linear medium- or low-density ethylene copolymer composition obtained by uniformly melt kneading a mixture of a linear medium- or low-density copolymer of ethylene and 2.6 to 25% by weight of an α-olefin, having a density of not less than 0.90 g/cm³ but less than 0.94 g/cm³ and a melt index $(MI)_1$ of not more than 3 g/10 minutes, and at least one peroxide radical initiator in an amount of not less than 0.0005% by weight but less than 0.1% by weight based on the weight of the linear medium- or low-density copolymer in the substantial absence of oxygen at a temperature of from the melting point of the linear medium- or low-density copolymer to a temperature of less than the thermal decomposition temperature of the linear medium- or low-density copolymer for a time such that the ratio of the melt index of the modified linear medium-or low-density copolymer composition $(MI)_2$ to that of the linear medium- or low-density copolymer $(MI)_1$ $((MI)_2/(MI)_1)$ is 0.05 to 0.9.

4,465,813

THERMOPLASTIC COMPOSITION OF ACRYLIC COPOLYMERS AND CROSSLINKING AGENTS AND PROCESS FOR ITS PREPARATION

Richard Sattelmeyer, Wiesbaden; Heinz Schmelzer, Rümmelsheim, and Richard Gutte, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 296,590, Aug. 27, 1981, abandoned. This application May 27, 1983, Ser. No. 498,833
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032707
Int. Cl.³ C08F *8/42*
U.S. Cl. 525—366 **10 Claims**

1. Thermoplastic composition having high cohesion and reduced tendency to flow, comprising

(A) 90 to 99.99 wt.-% of at least one copolymer of

(a) 20 to 95 wt.-% of at least one alkyl ester of an α,β-ethylenically unsaturated at most dicarboxylic acid which contains 1 to 12 carbon atoms in the alcohol group,

(b) 0.1 to 20 wt.-% of at least one amide, unsubstituted at the nitrogen atom, of an α,β-ethylenically unsaturated at most dicarboxylic acid,

(c) 0.1 to 15 wt.-% of at least one α,β-ethylenically unsaturated at most dicarboxylic acid, and

(d) 0 to 50 wt.-% at least one other α,β-ethylenically unsaturated copolymerisable monomeric compound,

(B) 0.01 to 10 wt.-% of at least one cross-linking agent, which is a metal compound of an alkyl acetoacetate with 1 to 6 carbon atoms in the alkyl group or a metal compound of a dihydric alcohol with 2 to 6 carbon atoms, the metal atom being an element of the second, third or fourth group of the Periodic Table,

wherein the proportions of (A) and (B) and of (a) to d) must add up to 100%, and

(C) from 0 to 500 parts by weight, based on 100 parts by weight of the sum of components (A) and (B), of other additives acting as extenders and other conventional additives, the proportion of resins of component (C) being up to 100 parts by weight.

4,465,814

THERMOPLASTIC COPOLYMER OF POLY(BISPHENOL A TEREPHTHALATE) COPOLYCARBONATE AND POLY(BISPHENOL A ISOPHTHALATE) COPOLYCARBONATE

Clive P. Bosnyak, Selly Oak; Robert N. Haward, Harborne, and Ian W. Parsons, Selly Oak, all of England, assignors to The Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 169,211, Jul. 15, 1980, Pat. No. 4,355,150. This application Jul. 16, 1982, Ser. No. 399,128
Claims priority, application United Kingdom, Jul. 25, 1979, 7925845
Int. Cl.³ C08L *69/00*; C08G *63/46*
U.S. Cl. 525—439 **5 Claims**

1. A thermoplastic composition comprising a copolymer of (a) poly (bisphenol A terephthalate) copolycarbonate and (b) poly (bisphenol A isophthalate) copolycarbonate having a molar ratio of phthalate to carbonate units in the inclusive range of 2 to 10.

4,465,815

POLYHYDROXY OLIGOMERS FOR HIGH SOLIDS COATINGS II

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,801
Int. Cl.³ C08L *67/02, 61/28*
U.S. Cl. 525—443 **44 Claims**

1. A thermosetting coating composition adapted for low temperature bake applications comprising:

(A) a polyhydroxy oligomer having a number average $(\bar{M}_n)$ molecular weight of between about 300–2000 and comprising the reaction product of:

(i) an acid ester made by reacting:

(a) a C_4–C_{10} aliphatic branched diol, and

(b) an alkyl hexahydrophthalic anhydride,

wherein (a) and (b) are combined in the reaction mixture in amounts and under conditions sufficient to result in reaction in a molar ratio of greater than 1:1 up to 1:2; and

(ii) a monoepoxide C_2–C_{10} monomer, wherein said monomer is included in an amount sufficient to provide reaction of about 1.0 epoxide group for each acid group of said acid ester;

(B) an amine-aldehyde crosslinking agent; and

(C) 0–50 weight percent based on the total weight of (A), (B) and (C) of a hydroxy functional additive having a number average molecular weight $(\bar{M}_n)$ of between about 150–6000,

said amine-aldehyde crosslinking agent being included in said composition in an amount sufficient to provide at least about 0.60 equivalents of nitrogen crosslinking functionality for each equivalent of hydroxyl functionality included in said composition either on said polyhydroxy oligomer or as a hydroxyl group of said hydroxy functional additive.

4,465,816
STABLE WATER-BORNE EPOXY RESIN

Andreas Lindert, Troy, Mich., assignor to Parker Chemical Company, Madison Heights, Mich.

Filed Nov. 28, 1980, Ser. No. 210,909

Int. Cl.³ C08F *283/10;* **C08G** *8/30;* **C08L** *61/14, 63/10*

U.S. Cl. 525—488 **27 Claims**

1. A free radical reaction product of an epoxy resin backbone having an organic unsaturated functional site and a thio acid, said epoxy resin backbone being the reaction product of a lower molecular weight epoxy compound having terminal oxirane groups and a multifunctional monomer having a functional moiety reactive with an oxirane moiety of said epoxy compound and a functional moiety comprising an organic unsaturated functional site, said resulting epoxy resin backbone being further reacted, in a free radical initiated chain reaction, with said thio acid to graft said thio acid onto said epoxy resin backbone at the unsaturated functional site, the amounts of said epoxy resin, multifunctional monomer and thio acid being such that the said reaction product from the free radical reaction has an actual acid number of at least 10.

4,465,817
MODIFIED ETHERIFIED PHENOL/ALDEHYDE CONDENSATION PRODUCTS AND THEIR USE FOR BREAKING PETROLEUM EMULSIONS

Siegfried Billenstein; Fritz J. Gohlke, both of Burgkirchen/Alz; Martin Hille, Liederbach, and Roland Böhm, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,173

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223691

Int. Cl.³ C08L *61/08*

U.S. Cl. 525—507 **6 Claims**

1. A modified etherified phenol/aldehyde condensation product which has been prepared by subjecting

(a) an addition reaction product which has been obtained by reacting aliphatic aldehydes with phenol in a molar ration of 1:1 to 3:1 at temperatures of 50° to 80° C. in the presence of an alkaline catalyst, to a condensation reaction at 80° to 150° C., after prior neutralization and, if appropriate, in the presence of inert solvents, with

(b) a block polymer which has been prepared by reacting polypropylene glycols having molecular weights of 1,300 to 3,000 with 20 to 100% by weight of ethylene oxide in the presence of alkaline catalysts, in a ratio of 0.5 to 4 moles of (a) to 1 mole of (b), and removing the water of the reaction which is formed, and

(c) adding on 10 to 400 g of propylene oxide, relative to 100 g of condensation product, or 10 to 200 g of ethylene oxide and propylene oxide in a ratio of 1:0.5 to 14, relative to 100 g of condensation product, in an addition reaction, to the etherified phenol/aldehyde condensation product thus obtained.

4,465,818
ROOM TEMPERATURE STABLE, HEAT ACTIVATED ORGANOPOLYSILOXANE COMPOSITIONS

Akihiko Shirahata, and Shosaku Sasaki, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 24, 1983, Ser. No. 478,433

Claims priority, application Japan, Apr. 2, 1984, 57-54877

Int. Cl.³ C08K *5/01;* **C08L** *83/04;* **C08G** *77/06*

U.S. Cl. 528—12 **20 Claims**

1. A composition obtained by a method comprising the mixing of components comprising

(a) an alkenyl group-containing organopolysiloxane component comprising at least one siloxane unit having the formula $R_a^1R_b^2SiO_{(4-a-b)/2}$ wherein R^1 denotes a silicon-bonded alkenyl group having from 2 to 4 carbon atoms, inclusive, R^2 denotes a silicon-bonded substituted or unsubstituted monovalent hydrocarbon group, a has a value of from 1 to 3, b has a value of from 0 to 2 and a+b has a value of from 1 to 3, all values inclusive, any remaining siloxane units in the alkenyl group-containing organopolysiloxane having the formula $R_x^2SiO_{(4-x)/2}$ wherein R^2 is as denoted above and x has a value of from 0 to 3, inclusive;

(b) an organohydrogenpolysiloxane component comprising at least one siloxane unit having the formula $H_cR_d^3SiO_{(4-c-d)/2}$ wherein R^3 denotes a silicon-bonded substituted or unsubstituted monovalent hydrocarbon group, c has a value of from 1 to 3, d has a value of from 0 to 2 and c+d has a value of from 1 to 3, all values inclusive, any remaining siloxane units in the organohydrogenpolysiloxane having the formula $R_y^3SiO_{(4-y)/2}$ wherein R^3 is as denoted above and y has a value of from 0 to 3, inclusive;

(c) a cure catalyzing amount of a hydrosilylation curing catalyst component for the composition; and

(d) a cure inhibiting amount of an unsaturated hydrocarbon component having the formula $HC{\equiv}C{-}CR^4{=}CR^5R^6$ wherein each R^4, R^5 and R^6 denotes, independently, a hydrogen atom, a monovalent hydrocarbon group or a divalent hydrocarbon group with the requirements that the total number of carbon atoms in the R^4, R^5 and R^6 groups has a value of from 2 to 6 and when R^4 and R^5 or R^5 and R^6 are divalent they are bonded together by their second valence.

4,465,819
SEMI OR FULLY CONTINUOUS PROCESS FOR POLYESTER OF BISPHENOL AND DICARBOXYLIC ACID BY TRANSESTERIFICATION POLYMERIZATION AND PRODUCT THEREOF

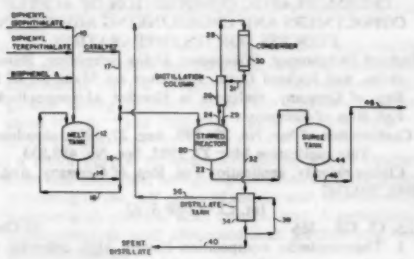
George M. Kosanovich, Wilson, and Gideon Salee, Williamsville, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 232,929, Feb. 9, 1983, Pat. No. 4,415,721, which is a continuation-in-part of Ser. No. 198,979, Oct. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,742, Mar. 10, 1980, Pat. No. 4,319,017. This application Apr. 11, 1983, Ser. No. 483,990

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.³ C08G *63/22*

U.S. Cl. 528—176 **87 Claims**



1. In the process of preparing a linear aromatic polyester by transesterification melt polymerization of monomer reactants consisting essentially of a bisphenol and a diaryl ester of a dicarboxylic acid in a polymerization reaction zone which comprises reacting said bisphenol and said diaryl ester in a first reaction stage of said zone to prepare a polyester oligomer, and thereafter continuing the reaction in a second reaction stage of said zone to produce the polyester product, wherein the diaryl ester is the diaryl ester of a mixture of about 15 to about 85 mole percent isophthalic acid and about 85 to about 15 mole percent terephthalic acid;

the improvement wherein the polymerization is carried out in the first reaction stage either batchwise or substantially

continuously, and the polymerization is continued in the second reaction stage substantially continuously, with the provision that when the polymerization in the first reaction stage is carried out batchwise, the polymerization in the second stage is carried out in a wiped film reaction zone.

4,465,820

COPOLYESTERCARBONATES

Kenneth F. Miller, and William Hilakos, both of Mt. Vernon, Ind., assignors to General Electric Company, New York, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,846

Int. Cl.³ C08G 63/64

U.S. Cl. 528—194 **7 Claims**

1. A composition comprising a copolyestercarbonate prepared from a dihydric phenol, a carbonate precursor, a terephthalic acid or ester forming derivative thereof, an isophthalic acid or ester forming derivative thereof, said copolyestercarbonate having (1) from about 70 to about 95 weight percent ester content and (2) a range of terephthalate groups which maintains a consistently high 3.2 millimeter Notched Izod impact resistance for the said copolyestercarbonate while concurrently achieving a high level improvement in stress cracking resistance the terephthalate groups being from about two to about 15 percent of the ester content.

4,465,821

PROCESS FOR THE CONTINUOUS PRODUCTION OF POLYAMIDES

Werner Nielinger; Wolfgang Alewelt, and Karl H. Hermann, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 15, 1983, Ser. No. 504,666

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1982, 3223823

Int. Cl.³ C08G 69/26

U.S. Cl. 528—335 **5 Claims**

1. A continuous process for the production of polyamide which can be processed by injection molding or extrusion comprising polycondensation of an aqueous solution of salts of substantially equimolar quantities of diamine and dicarboxylic acid comprising at least one arylene dicarboxylic acid, wherein under atmospheric pressure said aqueous salt solution is continuously added to a precondensate melt of the polyamide to be produced which melt is maintained at a temperature of at least 180° C. and from which precondensate melt water is simultaneously and continuously distilled off and precondensate melt is simultaneously and continuously removed and further polycondensed to produce the polyamide.

4,465,822

POLYAMIDE FROM ARALKYLENE DIAMINE, DICARBOXYLIC ACID AND TRICARBOXYLIC ACID

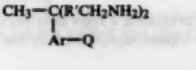
Stanley D. Turk, and Charles A. Drake, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 326,107, Nov. 30, 1981, Pat. No. 4,408,037, which is a division of Ser. No. 138,942, Apr. 9, 1980, Pat. No. 4,324,738, which is a division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Jun. 3, 1983, Ser. No. 500,746

Int. Cl.³ C08G 69/26

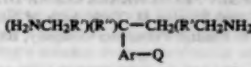
U.S. Cl. 528—342 **61 Claims**

1. As a composition of matter, a polyamide resin prepared by reacting at least one aralkylenediaminee selected from the group consisting of:

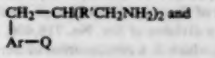


(VII)

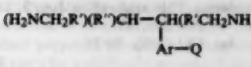
-continued



(VIII)



(IX) and



(X)

wherein each R' is an alkylene or alkylidene radical of at least one carbon atom; R'' is an alkyl radical of at least one carbon atom; Ar is a divalent phenylene or naphthylene radical and said —Ar—Q contains 6 to 22 carbon atoms; and Q is selected from the group consisting of —H, —X, —R''', —N(R''')$_2$, —NH$_2$'HX, —OR''', —SH, —OH, and —SR''', wherein X is a halogen and is fluorine, chlorine, bromine, or iodine, and R''' is an alkyl radical of 1 to 6 carbon atoms;

with at least one alpha, omega-hydrocarbon dicarboxylic acid of C_6 to C_{16} carbon atoms per molecule, and

a minor amount of at least one hydrocarbon tricarboxylic acid of C_6 to C_{16} carbon atoms per molecule,

under reaction conditions suitable for forming said polyamide resin.

4,465,823

ETHYLENICALLY UNSATURATED CROSSLINKABLE TRANSPARENT POLYAMIDE

Joseph Berger, Basel; Josef Pfeifer, Therwil, both of Switzerland, and Dieter Reinehr, Kandern, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

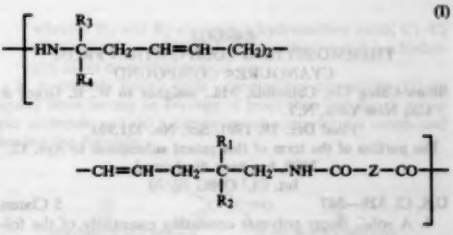
Filed Jan. 26, 1983, Ser. No. 461,050

Claims priority, application Switzerland, Jan. 29, 1982, 561/82

Int. Cl.³ C08G 69/26

U.S. Cl. 528—345 **7 Claims**

1. A transparent polyamide which repeating structural units of the formula I



(I)

in which R_1 is C_{1-12}-alkyl; R_2 is hydrogen or C_{1-12}-alkyl; R_3 is C_{1-12}-alkyl, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, substituted or unsubstituted aryl or, when R_4 is hydrogen, R_3 is also —CH=CH—alkyl or —C(alkyl)=CH—alkyl, each having 1–4 C atoms in the alkyl groups; R_4 is hydrogen, C_{1-12}-alkyl, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms or substituted or unsubstituted aryl; or R_1 and R_2 or R_3 and R_4 together are alkylene having 3–11 C atoms; and Z represents at least one identical or different saturated or unsaturated aliphatic or aromatic divalent radical.

4,465,824

POLYAMIDE RESIN FROM ARALKYLENE DIAMINE

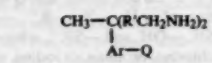
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 326,107, Nov. 30, 1981, Pat. No. 4,408,037, which is a division of Ser. No. 138,942, Apr. 9, 1980, Pat. No. 4,324,738, which is a division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Jun. 3, 1983, Ser. No. 500,747

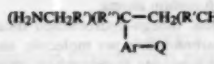
Int. Cl.³ C08G 69/26

U.S. Cl. 528—347 19 Claims

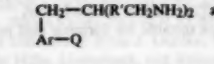
1. As a composition of matter, a polyamide resin prepared by reacting at least one aralkylenediamine selected from the group consisting of:



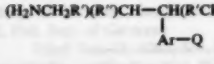
(VII)



(VIII)



and (IX)



(X)

wherein each R′ is an alkylene or alkylidene radical of at least one carbon atom; R″ is an alkyl radical of at least one carbon atom; Ar is a divalent phenylene or naphthylene radical and said —Ar—Q contains 6 to 22 carbon atoms; and Q is selected from the group consisting of —H, —X, —R‴, —N(R‴)$_2$, —NH$_2$′HX, —OR‴, —SH, —OH, and —SR‴, wherein X is a halogen and is fluorine, chlorine, bromine, or iodine, and R‴ is an alkyl radical of 1 to 6 carbon atoms;

with at least one alpha, omega-hydrocarbon dicarboxylic acid of C_6 to C_{16} carbon atoms per molecule, under reaction conditions suitable for forming said polyamide resin.

4,465,825

THERMOSETTING COMPOSITION FROM CYANOUREA COMPOUND

Shiow-Ching Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

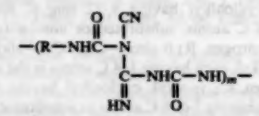
Filed Dec. 18, 1981, Ser. No. 331,951

The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.

Int. Cl.³ C08G 71/10

U.S. Cl. 528—367 5 Claims

1. A solid, linear polymer consisting essentially of the following recurring structural units:



wherein R is the organic moiety of a polyisocyanate remaining after reaction of the isocyanate groups with cyanamide to form cyanourea groups and m is at least 2.

4,465,826

CATALYST SYSTEMS CONTAINING AN ORGANIC DISULFIDE CARBOXYLATES AND/OR ORGANIC COMPLEX COMPOUNDS OF METALS, AND BASIC AMINES FOR THE OXIDATIVE HARDENING OF PLASTICS PRECURSORS CONTAINING MERCAPTO GROUPS

Wolfgang Wellner; Josef Pedain, both of Cologne, and Hermann Gruber, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,808

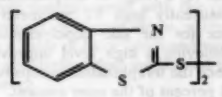
Claims priority, application Fed. Rep. of Germany, May 26, 1981, 3120993

Int. Cl.³ B01J 27/04, 27/24

U.S. Cl. 528—374 9 Claims

1. A process for accelerating the oxidative hardening of plastics precursors containing mercapto groups which comprises adding a catalyst system containing

(a) dibenzothiazyl disulphide of the following formula:



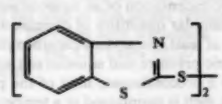
(b) about 0.02 to 0.5 parts by weight, based on the weight of component (a), of a carboxylate and/or an organic complex compound of manganese, iron, nickel, or cobalt and additionally

(c) about 0.05 to 1.0 part by weight, based on the weight of component (a), of an organic base comprising a member selected from the group consisting of guanidine, guanidines substituted with inert substituents and tertiary amines containing inert substituents,

to the plastics precursors containing mercapto groups and oxidatively hardening said plastics precursors.

6. A catalyst composition comprising

(a) dibenzothiazyl disulphide of the following formula:



(b) about 0.02 to 0.5 parts by weight, based on the weight of component (a), of a carboxylate and/or an organic complex compound of manganese, iron, nickel or cobalt and additionally

(c) about 0.05 to 1.0 part by weight, based on the weight of component (a), of an organic base comprising a member selected from the group consisting of guanidine, guanidines substituted with inert substituents and tertiary amines containing inert substituents.

4,465,827

PROCESS FOR PREPARING HIGH POLYMERIC SUBSTANCE HAVING SACCHARIDE SIDE CHAINS

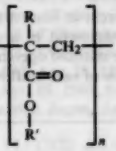
Takao Kawasaki, Sayama; Yoshiaki Osaka, Nagareyama; Yukiharu Yamaguchi, Hino, and Saichi Ono, Setagaya, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 105,653, Dec. 20, 1979, Pat. No. 4,328,337. This application Aug. 5, 1981, Ser. No. 290,206

Int. Cl.³ C07H 1/00

U.S. Cl. 536—18.6 6 Claims

1. A process for preparing a high polymeric substance having saccharide side chains represented by the formula:



wherein R represents a hydrogen atom or a methyl group and R' represents a residue of a saccharide selected from the group consisting of glucose, fructose, maltose, mannose, lactose and cellobiose, which is acyl-bonded at its 1-position, and n is an integer of 10 to 1000, which comprises:

reacting methacrylic acid or acrylic acid with a compound selected from the group consisting of 3,4,6-tri-O-acetyl-glucose 1,2-ethylorthoacetate, 3,4,6-tri-O-acetyl-fructose 1,2-ethylorthoacetate, 3,6,2',3',4',6'-hexa-O-acetyl-maltose 1,2-ethylorthoacetate, 3,4,6-tri-O-acetyl-mannose 1,2-ethylorthoacetate, 3,6,2',3',4',6'-hexa-O-acetyl-lactose 1,2-ethylorthoacetate and 3,6,2',3',4',6'-hexa-O-acetyl-cellobiose 1,2-ethylorthoacetate to obtain a monomeric compound,

polymerizing said monomeric compound in an inert solvent in the presence of an initiator for radial polymerization at a temperature of 10° to 200° C., and

de-acetylating the thus polymerized substance by using a de-acetylating agent at a temperature not more than room temperature.

4,465,828

PROCESS OF PREPARING ALKYLSACCHARIDES

Allen H. Rau, and Donald T. Speckman, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 452,647, Dec. 23, 1982, abandoned. This application Feb. 17, 1984, Ser. No. 580,282

Int. Cl.[3] **C07G** *3/00;* **C07H** *1/00;* **C08B** *37/00*

U.S. Cl. 536—18.6 **19 Claims**

1. In the process for producing an alkylsaccharide by reacting an alcohol with a reducing sugar containing from 5 to 6 carbon atoms, or source thereof, in the presence of a strong acid catalyst, the improvement of incorporating in the reaction mixture from about 0.0015 to about 1% of hydroxy polycarboxylic acid, selected from the group consisting of citric acid, maleic acid, tartaric acid, salts of said acids, hydrates of said acids, and mixtures thereof.

13. In the process of heating an alkylsaccharide to a temperature above 120° C. to about 165° C. wherein the saccharide portion of said alkylsaccharide is derived from a reducing sugar containing five or six carbon atoms, the improvement of incorporating from about 0.003 to about 2% of a hydroxy polycarboxylic acid selected from the group consisting of citric acid, tartaric acid, maleic acid, and mixtures thereof.

4,465,829

ELASTOMERIC COMPOSITION COMPRISING NATURAL RUBBER FOR USE UNDER DYNAMIC, HIGH HEAT CONDITIONS

Daniel F. Graves, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 6, 1983, Ser. No. 529,461

Int. Cl.[3] **C08K** *3/04, 3/34, 5/01;* **C08L** *7/00*

U.S. Cl. 524—432 **17 Claims**

1. Elastomeric composition for use for providing a cured composition for use under dynamic, high heat conditions and having increased blow-out time without undue reduction in modulus, tensile and elongation properties, said elastomeric composition comprising

(a) 100 parts by weight of elastomer selected from the group consisting of natural rubber and blends of natural rubber with up to about 50% by weight synthetic rubber selected from the group consisting of polybutadiene, polystyrene-butadiene, neoprene and EPDM elastomers,

(b) from 5 to about 15 parts by weight of polyisobutylene having a number average molecular weight ranging from about 800 to about 2,000,

(c) from about 30 to about 75 parts by weight of reinforcing filler.

7. A cured elastomeric product for use under dynamic, high heat conditions and having increased blow-out time without undue reduction in modulus, tensile and elongation properties, said product prepared by curing a composition comprising

(a) 100 parts by weight of elastomer selected from the group consisting of natural rubber and blends of natural rubber with up to about 50% by weight synthetic rubber selected from the group consisting of polybutadiene, polystyrene-butadiene, neoprene and EPDM elastomers,

(b) from 5 to about 15 parts by weight of polyisobutylene having a number average molecular weight ranging from about 800 to about 2,000,

(c) from about 30 to about 75 parts by weight of reinforcing filler,

(d) an accelerated sulfur curing system.

4,465,830

LATENT CURING AGENTS FOR EPOXY RESINS

Koji Takeuchi, Yokohama; Nobuo Ito, Oisomachi; Masahiro Abe, and Kiyomiki Hirai, both of Kawasaki, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Continuation of Ser. No. 445,154, Nov. 29, 1982, abandoned. This application Oct. 3, 1983, Ser. No. 537,328

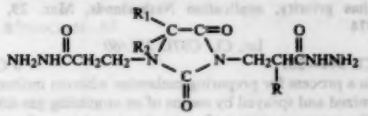
Claims priority, application Japan, Dec. 1, 1981, 56-193065; Jan. 29, 1982, 57-12892

Int. Cl.[3] **C08G** *59/44, 59/54;* **C07D** *403/30*

U.S. Cl. 528—117 **12 Claims**

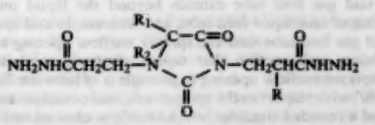
1. A method of curing epoxy resin compositions, which comprises:

heating an epoxy resin composition comprising (a) an epoxy resin having an average of more than one epoxy group per molecule and (b) a curing agent comprising a compound having the formula:



wherein R_1 and R_2 are each a hydrocarbon atom, C_1–C_8 alkyl radical or $—CH_2CH_2SCH_3$ radical and R is a hydrogen atom or methyl radical.

3. A curable epoxy resin composition comprising (a) an epoxy resin having an average of more than one epoxy group per molecule and (b) a curing agent comprising a compound having the formula:



wherein R_1 and R_2 are each a hydrogen atom, C_1–C_8 alkyl radical or $—CH_2CH_2SCH_3$ radical, and are the same or different from each other; and R is a hydrogen atom or methyl radical.

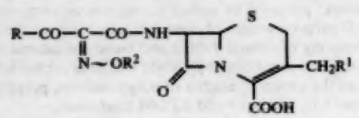
5. The curable epoxy resin composition claimed in claim 3, wherein R_1 is a hydrogen atom, R_2 is methyl, propyl, isopropyl, sec.-butyl or $—CH_2CH_2SCH_3$, and R is a hydrogen atom or methyl radical.

4,465,831
KETOIMINOCEPHALOSPORIN DERIVATIVES

Piero Bellani, Milan, Italy; Goffredo Bolis, Bergamo; Giampietro Broccali, Milan; Roberto Giani, Milan, and Mario Pizza, Milan, all of Italy, assignors to ISF S.p.A., Milan, Italy

Filed Dec. 18, 1981, Ser. No. 332,326
Claims priority, application Italy, Dec. 24, 1980, 26945 A/80
Int. Cl.³ C07D 501/28
U.S. Cl. 544—26 6 Claims

1. Ketoiminocephalosporins of the formula



wherein:

R is an alkyl radical having from 2 to 4 carbon atoms, a phenyl or a 5-membered heterocyclic radical selected from the group consisting of furyl, thiazolyl and aminothiazolyl;

R^1 is an acetoxy, carbamoyloxy or a S-5- or 6-membered heterocyclic ring containing one or more nitrogen atoms, alone or combined with sulphur, and unsubstituted or substituted with an alkyl or sulphoalkyl radical containing one to three carbon atoms or with a carboxy or an amino group;

R^2 is hydrogen, alkyl having one or two carbon atoms or acetyl, provided that R^2 is hydrogen when R is an alkyl radical.

4,465,832
MELAMINE PREPARATION

Willem de Wit, Sittard, and Winfried J. W. Vermijs, Geleen, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

PCT No. PCT/NL81/00007, 371 Date Nov. 16, 1981, 102(e) Date Nov. 16, 1981, PCT Pub. No. WO81/02855, PCT Pub. Date Oct. 15, 1981
PCT Filed Mar. 27, 1981, Ser. No. 324,389
Claims priority, application Netherlands, Mar. 29, 1980, 8001874
Int. Cl.³ C07D 251/60
U.S. Cl. 544—201 3 Claims

1. In a process for preparing melamine wherein molten urea is atomized and sprayed by means of an atomizing gas selected from the group consisting of ammonia or a mixture of ammonia and carbon dioxide through a two-phase sprayer into a fluidized bed of a particulate solid catalytically active material wherein said sprayer is comprised of a liquid feed tube adapted for the supply of molten urea, terminating with a liquid outflow opening and positioned around the axis of the sprayer and coaxially within a gas feed tube adapted for the supply of atomizing gas and terminating with a sprayer outflow opening, said liquid and gas feed tubes being relatively positioned such that said gas feed tube extends beyond the liquid outflow opening of said liquid feed tube, and wherein, in said sprayer,

said gas feed tube near the sprayer outflow opening has an inner wall section that tapers narrower towards the sprayer outflow opening at an angle α of between 70° and 90° with respect to the sprayer axis, and continues by way of a rounded shoulder into an outflow channel ending at said sprayer outflow opening, the smallest diameter of said outflow channel being 2.5 to 10 times the radius of said rounded shoulder, and between 1.0 and 1.6 times the diameter of said liquid outflow opening, and

said liquid feed tube has an outer wall, and an end face between said outer wall and liquid outflow opening chamfered at an angle α′ of between 70° and 90° with respect to the sprayer axis thereby forming a conical channel with an average apex of between 140° and 180° between said chamfered end face and the tapered inner wall section of the gas feed tube,

the improvement wherein at least a portion of said outflow channel is conically narrowed in a direction such that the diameter of the sprayer outflow opening is less than the diameter of any other portion of said outflow channel.

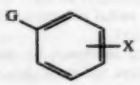
4,465,833
PROCESS FOR PREPARING ETHYNYLATED BENZOIC ACID DERIVATIVES

Kreisler S. Y. Lau, Alhambra, and Robert H. Boschan, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif. and Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 15, 1980, Ser. No. 197,300
Int. Cl.³ C07D 239/70, 307/89, 233/54, 213/06
U.S. Cl. 544—246 8 Claims

1. A process for preparing ethynylated benzoic acid derivatives in high yield that comprises the steps of:

A. catalytically coupling a compound whose structure is



where G may be H, CHO, $—CO_2G'$, $—CONH_2$, CONHG′ or CN wherein G′ may be an alkyl group having from 1 to 10 carbon atoms, an aryl group or a substituted aryl group, and X may be I, Cl, or Br with a compound whose structure is

where Y is an end-protecting moiety selected from the group consisting of $—Si(CH_3)_3$, —CHO, and $—CH(OCH_3)_2$, by heating a solution of said compounds in the presence of a metal catalyst thereby producing an end-protected ethynylated benzoic acid derivative; and

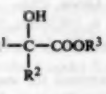
B. subsequently, removing said end-protective moiety from said acid derivative by a base-catalyzed deprotective reaction, thereby yielding an ethynylated benzoic acid derivative that is suitable for use as an intermediate in the synthesis of ethynyl-terminated aromatic oligomer.

4,465,834
ANTICHOLINERGIC DRUGS

Burton M. Baum, Hopewell, and Hugo Stange, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 20, 1965, Ser. No. 488,804
Int. Cl.³ C07D 451/02, 451/04, 451/06
U.S. Cl. 546—127 4 Claims

1. A substituted glycolic acid having the generic formula:



in which R^1 is a carbocyclic or branched aliphatic group of 3 to 8 carbon atoms, R^2 is a branched or linear aliphatic group containing 3 to 10 carbon atoms with 1 to 2 olefinic or acetylenic bonds and R^3 is an alkyl or cyclic group of 4 to 12 carbon atoms containing a tertiary amino nitrogen.

4,465,835

DIBENZ [B,E] OXEPIN DERIVATIVES

Hiroshi Takizawa; Osamu Morita; Yoshimasa Oiji, and Tamotsu Hashimoto, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

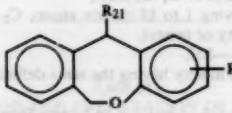
Division of Ser. No. 256,037, Apr. 21, 1981, Pat. No. 4,396,550. This application Apr. 19, 1983, Ser. No. 486,425

Claims priority, application Japan, Apr. 22, 1980, 55-52261; Apr. 22, 1980, 55-52262

Int. Cl.³ C07D 405/04

U.S. Cl. 546—133 9 Claims

1. A dibenz [b,e] oxepin compound represented by the formula:



wherein R_{11} represents an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom, a cyclohexyl group or a phenyl group; and R_{21} represents —HN—$(CH_2)_n$—Y, wherein Y represents a quinuclidinyl group and n is 0 or an integer of 1 to 3; and the pharmaceutically acceptable acid addition salts thereof.

4,465,836

DIISOCYANATES

Hans-Ulrich Buschhaus, Cologne; Kurt Findeisen, Odenthal, and Manfred Bock, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

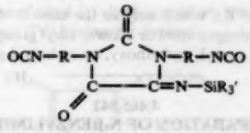
Filed Jan. 10, 1983, Ser. No. 456,901

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1982, 3202101

Int. Cl.³ C07F 7/10

U.S. Cl. 548—110 4 Claims

1. A diisocyanate corresponding to the general formula



wherein

R denotes an aliphatic hydrocarbon group having 2-12 carbon atoms, cycloaliphatic hydrocarbon group having 4-15 carbon atoms, aromatic hydrocarbon group having 6-15 carbon atoms or araliphatic hydrocarbon group having 7 to 15 carbon atoms each of which may be optionally halogen substituted, C_1–C_4-alkyl substituted, methoxy substituted, nitro substituted, C_1–C_4-alkoxycarbonyl substituted or nitrile group substituted, or a group obtained by removal of the isocyanate groups from a difunctional prepolymer with a maximum molecular weight of about 600 containing isocyanate end groups, and

R′ denotes an alkyl group.

4,465,837

PREPARATION OF 5-METHYL-2-OXAZOLIDINONES

Larry D. Kershner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 3, 1982, Ser. No. 384,813

Int. Cl.³ C07D 263/04

U.S. Cl. 548—229 6 Claims

1. A process for preparing 5-methyl-2-oxazolidinone, 5-methyl-3-(2-hydroxypropyl)-2-oxazolidinone or mixtures thereof, comprising contacting urea and propylene carbonate in the presence of an initiator at a temperature of from about 120° C. to about 200° C.

4,465,838

OXAPROZIN CALCIUM SALT

Ahmed S. Mughal, High Wycombe, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Apr. 26, 1982, Ser. No. 371,904

Claims priority, application United Kingdom, Apr. 28, 1981, 8113074

Int. Cl.³ C07D 263/32; A61K 31/42

U.S. Cl. 548—236 2 Claims

1. Calcium oxaprozin.

4,465,839

PROCESS FOR THE PRODUCTION OF HYDANTOINS

Bernhard Schulte, Krefeld; Wolfgang Jakob, Moers; Willi Dünwald, Leverkusen, and Karl-Heinrich Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

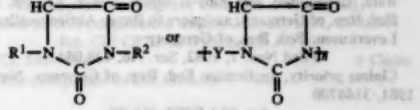
Filed Nov. 1, 1982, Ser. No. 437,968

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144698; Nov. 11, 1981, 3144697

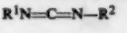
Int. Cl.³ C07D 233/78

U.S. Cl. 548—310 7 Claims

1. A process for the production of hydantoin compounds of the formula



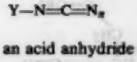
which comprises reacting a carbodiimide of the formula



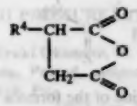
,

or

,



with an acid anhydride of the formula



and with a compound of the formula R^5—OH at a temperature from about 20° to about 250° C., wherein

R^1 and R^2 are both the same or are different and each is an aliphatic moiety containing from 1 to 20 carbon atoms, a cycloaliphatic moiety containing from 5 to 12 carbon atoms, an aliphatic-aromatic moiety containing from 6 to 20 carbon atoms, an aromatic moiety containing from 6 to 16 carbon atoms, a C_2–C_{12} dialkylamino-, C_2–C_{10} alkoxy-carbonyl-, C_6–C_{18} glycosyl, —$Si(R^3)_3$—, —$Sn(R^3)_3$—, —SO_2R^3, a hetero-aromatic moiety having at least one nitrogen, oxygen or sulfur hetero-atom and from 5 to 12 carbon atoms or a heterocycloaliphatic moiety having at least one nitrogen, oxygen or sulfur hetero-atom and containing from 5 to 12 carbon atoms with the hetero-aromatic or hetero-cycloaliphatic being unsubstituted or substituted by at least one

substituent selected from halogen, nitrile, C_2–C_{12} dialkylamino-, C_7–C_{12} alkyl arylamino-, C_2–C_{18} alkoxy-carbonyl-, C_7–C_{18} aroxy-carbonyl-, C_2–C_{18} alkyl-carboxy-, C_7–C_{18} aryl-carboxy, C_1–C_{18} alkoxy-, C_6–C_{18} aroxy-, C_1–C_{18} alkyl-, C_1–C_{18} halo-alkyland nitro;

R^3 is C_6–C_{12} aryl or C_1–C_8 alkyl;

R^4 is halogen or R^6COO—;

R^5 is an aromatic moiety having 6 to 20 carbon atoms unsubstituted or substituted by at least one substituent selected from halogen, C_1–C_8 alkyl, C_6–C_{12} aryl, C_1–C_8 halo-alkyl, C_1–C_8 alkoxy, C_6–C_{12} aroxy, C_1–C_8 alkoxy-carbonyl, C_7–C_{15} aroxy-carbonyl, C_2–C_8 alkyl-carboxy, C_7–C_{17} aryl-carboxy, C_1–C_6 alkylamino, C_2–C_{12} dialkylamino, amino and nitro;

a plurality of phenyl moieties bonded to one another through —O—, —S—, $-SO_2-$, =CH—, $-CH_2-$,

—CO— or —N=N—;

cyclohexyl;

isatin-bis-cresyl; or

isatin-bis-phenyl;

R^6 is C_1–C_6 alkyl or c_6–C_{10} aryl;

Y is a divalent moiety having the same definition as R^1 and R^2;

m is an integer from 1 to 4; and

n is an integer from 2 to 2000.

4,465,840

PROCESS FOR THE PRODUCTION OF (THIO) HYDANTOINS

Bernhard Schulte, Krefeld; Wolfgang Jakob, Moers; Willi Dünwald, Leverkusen, and Karl-Heinrich Meyer, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

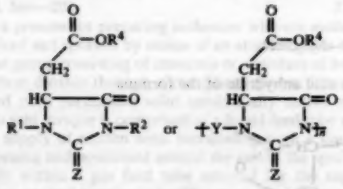
Filed Nov. 1, 1982, Ser. No. 438,054

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1981, 3144700

Int. Cl.³ C07D *233/78*

U.S. Cl. 548—310 **7 Claims**

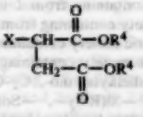
1. A process for the production of (thio)hydantoin compounds of the formula



which comprises reacting a carbodiimide of the formula

$$R^1-N=C=N-R^2 \text{ or } -Y-N=C=N_n$$

with a diester of the formula



at a temperature from about 20° to about 250° C., wherein R^1 and R^2 are both the same or are different and each is an aliphatic moiety containing from 1 to 20 carbon atoms, a cycloaliphatic moiety containing from 5 to 12 carbon atoms, an aliphatic-aromatic moiety containing from 6 to 20 carbon atoms, an aromatic moiety containing from 6 to 16 carbon atoms, a C_2–C_{12} dialkylamino-, C_2–C_{10} alkoxy-carbonyl-, C_6–C_{18} glycosyl, $-Si(R^3)_-$, $-Sn(R^3)_3-$, $-SO_2R^3$, a hetero-aromatic moiety having at least one nitrogen, oxygen or sulfur heteroatom and from 5 to 12 carbon atoms or a hetero-cycloaliphatic moiety having at least one nitrogen, oxygen or sulfur heteroatom and containing from 5 to 12 carbon atoms with the hetero-aromatic or hetero-cycloaliphatic being unsubstituted or substituted by at least one substituent selected from halogen, nitrile, C_2–C_{12} dialkylamino, C_7–C_{12} alkyl arylamino-, C_2–C_{18} alkoxy-carbonyl-, C_7–C_{18} aroxy-carbonyl-, C_2–C_{18} alkyl-carboxy-, C_7–C_{18} aryl-carboxy, C_1–C_{18} alkoxy-, C_6–C_{18} aroxy-, C_1–C_{18} alkyl-, C_1–C_{18} haloalkyl- and nitro;

R^3 is C_6–C_{12} aryl or C_1–C_8 alkyl;

R^4 is alkyl having 1 to 18 carbon atoms, C_5–C_{12} cycloaliphatic moiety or benzyl;

X is —OH or —SH;

Y is a divalent moiety having the same definition as R^1 and R^2;

Z is —O— or —S—; and n is an integer from 2 to 2000.

4,465,841

IMIDAZOLYLPHENYL AMIDINES

Enzo Cereda, Tortona; Arturo Donetti, Milan; Piero Del Soldato, and Mario Bergamaschi, both of Monza, all of Italy, assignors to Instituto de Angeli S.p.A., Milan, Italy

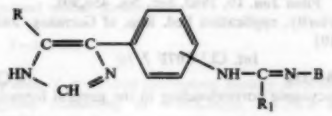
Division of Ser. No. 322,903, Nov. 19, 1981, Pat. No. 4,386,099. This application Sep. 29, 1982, Ser. No. 427,884

Claims priority, application Italy, Nov. 28, 1980, 26323 A/80

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—346 **1 Claim**

1. A compound of the formula



wherein R and R_1, which may be the same or different, each represent a hydrogen atom or a lower alkyl group and B represents a cyano, acetyl, carbethoxy, or carbamyl group.

4,465,842

PREPARATION OF N-BENZYLIMIDES

Michel Desbois, Rillieux, and Michel Reppelin, Collonges-au-Mont-d'Or, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed May 14, 1982, Ser. No. 378,223

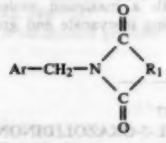
Claims priority, application France, May 15, 1981, 81 09698

Int. Cl.³ C07D *209/48, 207/12*

U.S. Cl. 548—473 **10 Claims**

1. A process for the preparation of an N-benzylimide having the structural formula:

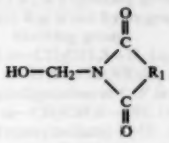
(I)



wherein Ar is a substituted or unsubstituted phenyl radical and R_1 is an aliphatic or aromatic hydrocarbon having 1 to 12 carbon atoms, comprising reacting a compound having the structural formula:

ArH (II)

with a compound having the structural formula:


(III)

in the presence of a solvent amount of hydrofluoric acid.

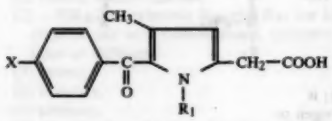
4,465,843

PROCESS FOR THE PREPARATION OF DERIVATIVES OF 2-PYRROLE ACETIC ACID WITH ANTI-INFLAMMATORY ACTIVITY

Margarita E. del Valle, Buenos Aires, Argentina, assignor to Laboratories Pharmedical SA, Luxembourg

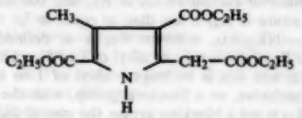
Filed Nov. 12, 1982, Ser. No. 441,234
Claims priority, application Spain, Nov. 16, 1981, 507.179
Int. Cl.³ C07D *207/323*
U.S. Cl. 548—539 **7 Claims**

1. A process for the preparation of derivatives of 2-pyrrole-acetic acid having the formula:

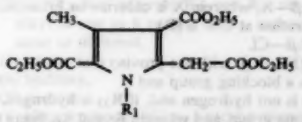

(I)

wherein R_1 is selected from the group of methyl and ethyl and X is selected from the group of hydrogen and chlorine, comprising the following steps:

(a) alkylation of ethyl 3,5-diethoxycarbonyl-4-methyl-2-pyrrole-acetate (IV) having the formula:

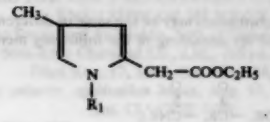

IV

by means of an alkylating agent selected from the group of alkyl halides and alkyl sulphates wherein said alkyl is methyl or ethyl in an alkaline medium in the presence of a quaternary ammonium salt phase transfer agent to obtain N-alkyl-3,5-diethoxycarbonyl-4-methyl-2-pyrrole-acetate, having the formula:


V

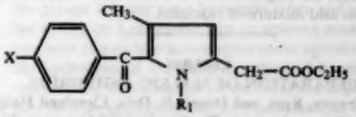
wherein R_1 is as above stated;

(b) saponification, esterification and decarboxylation of the derivative (V), in only one step, by means of an alkali agent and with ethanol and surfuric acid to form ethyl N-alkyl-4-methyl-2-pyrrolidine-acetate, having the formula:


(VI)

wherein R_1 is as above stated;

(c) benzoylating said compound (VI) with benzoyl chloride or p-chlorobenzoyl chloride in the presence of tin chloride or aluminum chloride, to obtain ethyl N-alkyl-4-methyl-5-benzoyl-2-pyrrolidine acetate, having the formula:


VII

wherein R_1 is as above stated, and

(d) saponifying compound (VII) with an alkali agent to form the compound of formula (I).

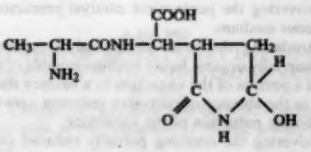
4,465,844

ALANYL-2-(5-HYDROXY-2-OXO-PYRROLIDIN-3-YL)GLYCINE

Satoshi Horii, Sakai; Hiroshi Fukase, Osaka, and Eiji Higashide, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 340,337, Jan. 18, 1982, Pat. No. 4,436,918. This application Aug. 23, 1983, Ser. No. 526,051
Claims priority, application Japan, Jan. 26, 1981, 56-10544
Int. Cl.³ C07D *207/26*; A61K *31/40*
U.S. Cl. 548—546 **1 Claim**

1. The compound of the formula



4,465,845

HIGH PRESSURE SYNTHESIS OF SULFUR-SELENIUM FULVALENES

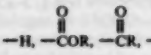
Yoshiyuki Okamoto, Ft. Lee, N.J., and Piotr S. Wojciechowski, Lodz, Poland, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 26, 1982, Ser. No. 372,058
The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.
Int. Cl.³ C07D *343/00*
U.S. Cl. 549—30 **12 Claims**

1. A process for preparing a fulvalene compound, said process comprising the step of subjecting a mixture of reactants to a pressure of at least about 1,000 atmospheres, for a time and at a temperature sufficient to form said fulvalene compound, said mixture of reactants comprising at least one compound selected from a first group consisting of carbon disulfide, carbon diselenide and carbon selenide sulfide, and said mixture of reactants comprising at least one compound selected from a second group consisting of compounds containing an acetylenic moiety of the general formula

ZC=CZ

wherein the Z substituents may be the same or different and are selected from the set consisting of the following members:



wherein R is selected from hydrogen and alkyl, aryl and alkaryl groups of up to about 12 carbon atoms; with the proviso that at least one of the Z substituents is an electron withdrawing group, with the further proviso that said mixture of reactants comprises one or more compounds selected from said first group such that both sulfide and selenide atoms are contained within the ring structure of a fulvalene compound prepared from said mixture of reactants.

4,465,846

PREPARATION OF MALEIC ANHYDRIDE

Noel J. Bremer, Kent, and Dennis E. Dria, Cleveland Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 320,780, Nov. 12, 1981, Pat. No. 4,396,535. This application Apr. 27, 1983, Ser. No. 488,902

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—260 **8 Claims**

1. A process for the production of maleic anhydride by the oxidation of 4 carbon atom hydrocarbons with molecular oxygen or an oxygen containing gas in the vapor phase at a reaction temperature of about 250° C. to about 600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalyst is prepared by

(a) introducing a pentavalent vanadium compound and a pentavalent phosphorus compound into an aqueous medium wherein the aqueous medium is free from agents which would substantially reduce the pentavalent vanadium compound;

(b) forming a substantially pentavalent, alpha-$VOPO_4$ catalyst precursor in the aqueous medium;

(c) recovering the pentavalent catalyst precursor from the aqueous medium;

(d) introducing the pentavalent catalyst precursor into a substantially organic liquid medium capable of reducing at least a portion of the vanadium to a valence state of about +4 in the absence of corrosive reducing agents;

(e) effecting reduction of the vanadium;

(f) recovering the resulting partially reduced catalyst precursor from the organic liquid medium;

(g) drying the partially reduced catalyst precursor;

(h) calcining the partially reduced catalyst precursor.

7. A process as in claim 1 including introducing a promoter element containing compound into the aqueous medium, or into the organic medium prior or subsequent to reduction of vanadium.

8. A process as in claim 7 wherein said promoter element is selected from Ti, Cr, W, Nb, Ta, Mn, Th, U, Co, Mo, Fe, Zn, Hf, Zr, Ni, Cu, As, Sb, Te, Bi, Sn, Ge, Cd, the lanthanides or mixtures thereof.

4,465,847

METHOD FOR THE PRODUCTION OF BUTYROLACTONES

Youval Shvo, Arsuf, Israel, assignor to Ramot University Authority for Applied Research and Industry Development Ltd., Tel-Aviv, Israel

Filed Sep. 20, 1982, Ser. No. 420,314

Claims priority, application Israel, Dec. 30, 1981, 64677

Int. Cl.³ C07D *307/32*

U.S. Cl. 549—295 **1 Claim**

1. A process for the production of butyrolactone comprising heating but-2-yne-1,4-diol at a temperature in the range from 50° to 200° C. in the presence of a catalyst selected from the group consisting of

$RuCl_2(PPh_3)_3$,
$RuH_2(PPh_3)_4$,
$RuH_2(CO)(PPh_3)_3$,
$RuHCl(CO)[P(C_6H_{11})_3]_3$,
$RuCl_3$,
$RhCl(PPh_3)_3$,
$RhH(PPh_3)_4$,
$IrCl(CO)(PPh_3)_2$, and
Ir(Bipyridine)(1,5-COD)Cl,

wherein Ph designates phenyl, and COD designates cyclooctadiene.

4,465,848

SPECTINOMYCIN COMPOUNDS

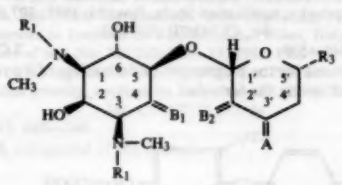
Richard C. Thomas, Oshtemo Township, Kalamazoo County, and Edward L. Fritzen, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 314,261, Oct. 23, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 417,313

Int. Cl.³ C07D *319/20, 309/10*

U.S. Cl. 549—361 **6 Claims**

1. A compound of formula I,



I

wherein R_1 is

(a) hydrogen or

(b) a blocking group;

wherein R_3 is

(a) hydrogen

(b) alkyl of 1 to 8 carbon atoms, inclusive,

(c) $—R_{31}—O—R_{32}$, wherein R_{31} is alkylene of 1 to 4 carbon atoms, inclusive, and R_{32} is hydrogen or alkyl of 1 to 6 carbon atoms, inclusive, with the proviso that the sum of the number of carbon atoms in R_{31} and the number of carbon atoms in R_{32} is less than or equal to 7,

(d) $—R_{31}—NR_{33}R_{34}$, wherein R_{31} is as defined above, wherein R_{33} is hydrogen or alkyl of 1 to 6 carbon atoms, inclusive, and R_{34} is hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, or a blocking group, with the proviso that if R_{34} is not a blocking group, the sum of the number of carbon atoms in R_{31} and the number of carbon atoms in whichever of R_{33} or R_{34} has the larger number of carbon atoms is less than or equal to 7, or

(e) alkyl of 1 to 4 carbon atoms, inclusive, substituted with 1, 2, or 3 halogen atoms;

wherein A is

(a) $=N_2$,

(b) α—H:β—H,

(c) α—H:β—X, wherein X is chlorine or bromine, i.e., the configuration at C-3′ is (R),

(d) α—Cl:β—Cl,

(e) $=CH(NR_5R_6)$, with the proviso that

(i) R_1 is a blocking group and

(ii) R_{34} is not hydrogen and, if R_{33} is hydrogen, R_{34} is a blocking group, and wherein R_5 and R_6, being the same or different, are alkyl of 1 to 6 carbon atoms, inclusive, and wherein the configuration at the vinylogous carbon bonded to C-3′ is, with respect to C-2′, E or Z, but not both,

(f) α—CHO:β—H, i.e., the configuration at C-3′ is (R), with the proviso that

(i) R_1 is a blocking group and

(ii) R_{34} is not hydrogen and, if R_{33} is hydrogen, R_{34} is a blocking group,

(g) methylene (=CH_2), with the proviso that

(i) R_1 is a blocking group and

(ii) R_{34} is not hydrogen and, if R_{33} is hydrogen, R_{34} is a blocking group,

(h) α—CH_2OH:β—H, i.e., the configuration at C-3′ is (R),

(i) α—H:β—$CH_2NR_5R_6$ or α—$CH_2NR_5R_6$:β—H, i.e., the configuration at C-3′ is (R) or (S) but not both,

(j) α—CH_2OH:β—OH, i.e., the configuration at C-3′ is (S),

(k) epoxymethano (—O—CH_2— or —CH_2—O—), with the proviso that

(i) R_1 is a blocking group and

(ii) R_{34} is not hydrogen and, if R_{33} is hydrogen, R_{34} is a blocking group,

(l) α—OH:β—CH_2N_3 or α—CH_2N_3:β—OH, i.e., the configuration at C-3′ is (R) or (S), with the proviso that

(i) R_1 is a blocking group and

(ii) R_{34} is not hydrogen and, if R_{33} is hydrogen, R_{34} is a blocking group,

(m) α—OH:β—$(CH_2)_m$—CN or α—$(CH_2)_m$—CN:β—OH, wherein m is 0 or 1, i.e., the configuration at C-3′ is (R) or (S),

(n) α—OH:β—$(CH_2)_p$—$NR_{41}R_{42}$ or α—$(CH_2)_p$—$NR_{41}R_{42}$:β—OH, wherein p is 1 or 2, and R_{41} and R_{42}, being the same or different, are

(i) hydrogen

(ii) alkyl of 1 to 12 carbon atoms, inclusive,

(iii) aryl of 6 to 12 carbon atoms,

(iv) aralkyl of 7 to 12 carbon atoms, inclusive, optionally substituted by one or two

(1) fluoro, chloro or iodo,

(2) —$NR_{46}R_{47}$, wherein R_{46} and R_{47} are hydrogen or alkyl of one to 6 carbon atoms, inclusive, being the same or different,

(3) cyano,

(4) hydroxy,

(5) carboxy,

(6) alkoxycarbonyl of 2 to 5 carbon atoms, inclusive, or

(7) alkoxy of one to 4 carbon atoms, inclusive,

(v) —R_{43}—R_{44}, wherein —R_{43}— is a single bond or R_{43} is alkylene of 1 to 4 carbon atoms, inclusive, and R_{44} is cycloalkyl of 3 to 10 carbon atoms, inclusive, or

(vi) —CO—R_{45}, wherein R_{45} is

(a) alkyl of one to 12 carbon atoms, inclusive, or aryl or aralkyl of 7 to 12 carbon atoms optionally substituted by one or two

(1) fluoro, chloro or iodo,

(2) —$NR_{46}R_{47}$, wherein R_{46} and R_{47} are hydrogen or alkyl of one to 6 carbon atoms, inclusive, being the same or different,

(3) cyano,

(4) hydroxy,

(5) carboxy,

(6) alkoxycarbonyl of 2 to 5 carbon atoms, inclusive, or

(7) alkoxy of one to 4 carbon atoms, inclusive,

(b) —R_{43}—R_{44} wherein R_{43} and R_{44} are as defined above, or

(c) pyridyl, piperazyl, pyrollyl or morpholinyl optionally substituted by

(1) fluoro, chloro or iodo,

(2) —$NR_{46}R_{47}$, wherein R_{46} and R_{47} are hydrogen or alkyl of one to 6 carbon atoms, inclusive, being the same or different,

(3) cyano,

(4) hydroxy,

(5) carboxy,

(6) alkoxycarbonyl of 2 to 5 carbon atoms, inclusive, or

(7) alkoxy of one to 4 carbon atoms, inclusive;

and wherein B_1 is α—OH:β—H and B_2 is oxo, when A is =N_2 or =$CH(NR_5R_6)$, or B_1 is α—B_3:β—H and B_2 is α—B_4:β—OH wherein B_3 and B_4 are taken together to form oxa (—O—), when A is not =N_2 or =$CH(NR_5R_6)$; or the pharmacologically acceptable acid addition salts thereof when R_1 and R_{34} are not blocking groups and A is not =N_2.

4,465,849

METHOD FOR THE PREPARATION OF AN AQUEOUS EMULSION OF SILICONE

Nobuyuki Terae, and Akira Abe, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 524,087

Claims priority, application Japan, Aug. 19, 1982, 57-143653

Int. Cl.³ C07F 7/08

U.S. Cl. 556—450 **11 Claims**

1. A method for the preparation of an aqueous emulsion of silicone which comprises the steps of:

(a) adding an organochlorosilane or a mixture of organochlorosilanes each expressed by the general formula R_nSiCl_{4-n}, in which R is a hydrogen atom or a halogen-substituted or unsubstituted monovalent hydrocarbon group having from 1 to 20 carbon atoms, at least one of the groups R being not a hydrogen atom, and n is a number of 1, 2 or 3, dropwise into an aqueous medium in the presence of a surface active agent under agitation to effect the hydrolysis of the silane or silanes following by the dehydration condensation of the resultant organosilanols into an organopolysiloxane with simultaneous emulsification of the organopolysiloxane in the aqueous medium to form an aqueous emulsion, and

(b) removing the hydrogen chloride formed by the hydrolysis of the silane or silanes from the aqueous emulsion by use of a neutralizing agent.

4,465,850

TREATMENT OF BRAIN INJURY DUE TO GRAY MATTER EDEMA WITH (INDANYLOXY) BUTANOIC ACIDS

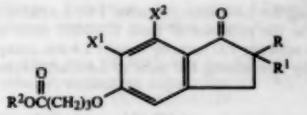
Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 291,982, Aug. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 183,546, Sep. 2, 1980, abandoned. This applicatior Sep. 30, 1982, Ser. No. 430,891

Int. Cl.³ C07C 69/76

U.S. Cl. 560—053 **32 Claims**

1. A compound of the formula



wherein

X^1 and X^2 are halo;

R is lower alkyl of from 1 to 6 carbon atoms;

R^1 is lower alkyl of 1 to 4 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, lowercycloalkylloweralkyl of 4 to 7 carbon atoms and phenyl;

R^2 is hydrogen or lower alkyl of 1 to 6 carbon atoms, and carboxy lower alkyl of 2 to 6 carbon atoms; and the pharmaceutically acceptable salts thereof.

4,465,851

GUANIDINOCYCLOHEXANECARBOXYLIC ACID DERIVATIVES

Mutsumi Muramatsu; Toshio Satoh, both of Tokushima; Hiroyasu Sekine, Kisai, and Atsushi Tendo, Tokyo, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,707

Claims priority, application Japan, Jan. 22, 1981, 56-7283; Jan. 22, 1981, 56-7284; Jan. 22, 1981, 56-7286; Jan. 29, 1981, 56-10831; Jan. 29, 1981, 56-10832

Int. Cl.³ C07C *129/12*

U.S. Cl. 560—125 2 Claims

2. 4'-t-Butylphenyl trans-4-guanidinomethylcyclohexanecarboxylate and pharmaceutically acceptable salts thereof.

4,465,852

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ESTERS

Haruhito Sato, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 330,010

Claims priority, application Japan, Dec. 25, 1980, 55-182856

Int. Cl.³ C07C *67/04*

U.S. Cl. 560—247 14 Claims

1. A process for producing a carboxylic acid ester comprising reacting an olefin selected from the group consisting of ethylene, propylene and butylene with a carboxylic acid selected from the group consisting of formic acid, acetic acid, propionic acid, butylic acid, isobutylic acid, valeric acid, 2,2-dimethylpropionic acid, caproic acid, acrylic acid, methacrylic acid, crotonic acid, chloroacetic acid, adipic acid, succinic acid, palmitic acid, stearic acid, oleic acid, oxalic acid, and malic acid, in the presence of a crystalline silicate having a molar ratio of silica to oxide of at least 12, said oxide being selected from the group consisting of boron oxide, chromium oxide and a combination of boron oxide and aluminum oxide, and wherein said crystalline silicate is prepared in the presence of at least one of (i) a nitrogen containing substance selected from the group consisting of tetraalkylammonium ion, alkylamine, aminoalcohol, and morpholine, and (ii) a crystalline silicate seed crystal prepared in the presence of said nitrogen containing substance.

4,465,853

METHOD FOR ISOMERIZING DIACETOXYBUTENES

Yoshinori Yoshida, and Hironobu Shinohara, both of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 156,257, Jun. 3, 1980. This application Nov. 26, 1982, Ser. No. 444,384

Claims priority, application Japan, Jun. 13, 1979, 54-73552; Feb. 6, 1980, 55-12533

Int. Cl.³ C07C *67/02;* B01D *3/34*

U.S. Cl. 560—262 9 Claims

1. A method for the isomerization of 3,4-diacetoxybutene-1, comprising:

contacting the 3,4-diacetoxybutene-1 with a cation exchange resin in the presence of from 0.1–2000 parts by weight acetic acid per 100 parts by weight 3,4-diacetoxybutene-1, thereby isomerizing the same to 1,4-diacetoxybutene-2.

4,465,854

PREPARATION OF ETHYL ACETATE

David M. Pond, and Thomas J. Glenn, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,578

Int. Cl.³ C07C *67/00, 67/297, 69/14*

U.S. Cl. 560—265 6 Claims

1. Process for the preparation of ethyl acetate which comprises hydrogenating at a temperature of about 100° to 250° C. and a pressure of about 500 to 5000 psig acetic anhydride or a mixture thereof with ethylidene diacetate in the presence of a catalytic amount of a Raney nickel catalyst and in the absence of strong protonic acid.

4,465,855

PROCESS FOR THE PREPARATION OF ARYLACETIC ACID DERIVATIVES

Endre Pálosi; Dezsö Korbonits; Pál Kiss; Csaba Gönczy; Gergely Heja; Judit Cser née Kun, all of Budapest; Rudolf Szebeni, Göd; Maria Szomor née Wundele, and Ida Szvoboda née Kanzel, both of Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

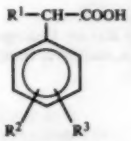
Division of Ser. No. 246,414, Mar. 23, 1981, Pat. No. 4,385,004, which is a division of Ser. No. 041,106, May 21, 1979, Pat. No. 4,317,920. This application Apr. 15, 1982, Ser. No. 368,721

Claims priority, application Hungary, May 23, 1978, CI-1829

Int. Cl.³ C07C *53/134*

U.S. Cl. 562—496 7 Claims

1. A process for the preparation of a compound of the formula (I)



wherein

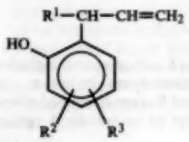
R^1 is hydrogen, methyl or ethyl;

R^2 is hydrogen, fluoro, or alkyl having 1 to 4 carbon atoms;

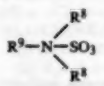
R^3 is hydrogen, phenyl, alkoxy having 1 to 6 carbon atoms, phenoxy, thenoyl or benzoyl; or

R^2 and R^3 together with the phenyl group to which they are attached form a naphthyl group which is unsubstituted or substituted by C_1 to C_4 alkyl or C_1 to C_4 alkoxy; which comprises the steps of:

(a) reacting a compound of the formula (V)



with a complex of the formula (X)

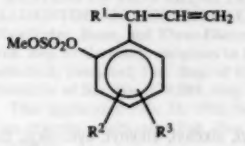


(X)

wherein

R^8 is C_1 to C_4 alkyl; and

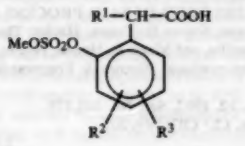
R^9 is C_1 to C_4 alkyl or phenyl, in an organic solvent at a temperature of 10° to 40° C., and subsequently treating the reaction mixture with an aqueous solution of an inorganic base, to yield a compound of the formula XVIa



(XVIa)

wherein Me is selected from the group consisting of sodium ion and potassium ion;

(b) oxidizing the compound of the formula (XVIa) in a solvent to yield a component of the formula XVIb



(XVIb)

and

(c) catalytically hydrogenating the compound of the formula XVIb to yield the desired product.

4,465,856

PROCESS FOR PURIFYING METHACRYLAMIDE

Masato Horiuchi, Chiba; Yoshinori Hatazaki, Kanagawa, and Kouji Terada, Chiba, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,597

Claims priority, application Japan, Jan. 20, 1981, 56-5973

Int. Cl.³ C07C *103/133*

U.S. Cl. 564—206 **10 Claims**

1. A process for purifying methacrylamide by recrystallizing crude methacrylamide from an aqueous solution thereof which comprises controlling the pH of the aqueous solution to an alkaline pH of at least 8 and then crystallizing methacrylamide out.

4,465,857

PHENYLHYDRAZONES

Peter Neumann, Wiesloch; Karl-Heinz Etzbach; Heinz Eilingsfeld, both of Frankenthal, and Gerhard Hoffmann, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

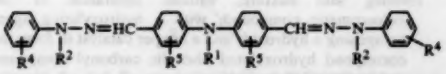
Filed Dec. 29, 1982, Ser. No. 454,281

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201202

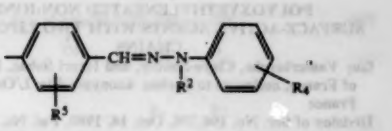
Int. Cl.³ C07C *109/16*

U.S. Cl. 564—251 **13 Claims**

1. A phenylhydrazone of the formula



where R^1 is C_1–C_4-alkyl or phenyl-C_1–C_4-alkyl, or is phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen, or is a radical of the formula



R^2 is C_1–C_4-alkyl or is phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen, and R^4 and R^5 independently of one another are each hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or halogen.

4,465,858

PROCEDURE FOR THE PARTIAL ALKOXYLATION OF POLYOXYALKYLENEAMINES

Michael Cuscurida, and Howard P. Klein, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,405

Int. Cl.³ C07C *85/00*

U.S. Cl. 564—477 **12 Claims**

1. A method for partially alkoxylating polyoxyalkyleneamines comprising

a. adding at least one alkylene oxide to an aqueous polyoxyalkyleneamine where

(1) the alkylene oxide has from 2 to 4 carbon atoms,

(2) the polyoxyalkyleneamine has a molecular weight of from 200 to 5,000,

(3) the proportion of water ranges from 5 to 15 wt.% based on the polyoxyalkyleneamine quantity, and

(4) the addition is conducted at a temperature between about 75° and 85° C., and

(5) the proportion of alkylene oxide is less than that necessary to totally alkoxylate the polyoxyalkyleneamine, and

b. digesting the mixture of oxide and polyoxyalkyleneamine at a temperature between 75° C. and 135° C. to give an alkoxylated polyoxyalkyleneamine product having a tertiary amine content of less than 90%.

4,465,859

N,N-DIALKYL-3-OXO-3-ALKYL-1,2-DIFLUORO-PROPENYLAMINE

Nobuo Ishikawa, Yokohama, and Tomoya Kitazume, Tokyo, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

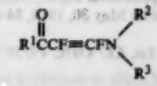
Filed Aug. 31, 1983, Ser. No. 528,117

Claims priority, application Japan, Aug. 31, 1982, 57-151005

Int. Cl.³ C07C *87/26*

U.S. Cl. 564—502 **2 Claims**

1. N,N-dialkyl-3-oxo-3alkyl-1,2-difluoropropenylamine as expressed by a general formula:



where R^1, R^2 and R^3 are same or different alkyl groups.

4,465,860
POLYOXYETHYLENEATED NON-IONIC SURFACE-ACTIVE AGENTS WITH TWO LIPOPHILIC CHAINS

Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 196,276, Oct. 14, 1980, Pat. No. 4,399,313. This application Dec. 21, 1982, Ser. No. 451,734
Claims priority, application France, Oct. 16, 1979, 79 25641
Int. Cl.³ C07C *147/14*
U.S. Cl. 568—37 6 Claims

1. A polyoxyethyleneated non-ionic surfactant compound having the formula

$$R—X—C_2H_3(OCH_2CH_2)_n(OH)—CH_2—Y—R'$$

wherein

X represents a sulfur atom or a sulfoxide group,

Y represents methylene,

R and R' each independently represent alkyl having 6 to 20 carbon atoms, or alkenyl having 6 to 20 carbon atoms, the sum of the number of carbon atoms in R and R' being 22 to 30, and

n is a number ranging from 1 to 40.

4,465,861
PROCESS FOR PRODUCING A MIXTURE CONTAINING CYCLOHEXANOL AND CYCLOHEXANONE

Joshua Hermolin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1983, Ser. No. 483,666
Int. Cl.³ C07C *45/53*
U.S. Cl. 568—342 12 Claims

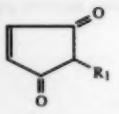
1. In a process for producing a mixture containing cyclohexanol and cyclohexanone wherein cyclohexane is oxidized to provide a reaction mixture containing cyclohexyl hydroperoxide and the cyclohexyl hydroperoxide is subsequently decomposed in the presence of starting cyclohexane to provide a mixture containing cyclohexanol and cyclohexanone, the improvement comprising conducting the decomposition step by contacting a reaction mixture containing cyclohexane and from about 0.1 to about 10% by weight of cyclohexyl hydroperoxide with a catalytic amount of a catalyst composition consisting essentially of (a) at least one cyclohexane-soluble salt of a transition metal selected from the group consisting of chromium, cobalt, iron, manganese, molybdenum and vanadium and having an anion selected from the group consisting of carboxylates, sulfonates, and alkylphosphates and (b) a sulfonate anion of a cyclohexane-soluble compound selected from the group consisting of alkyl and alkylarenesulfonic acids, alkylammonium sulfonates, alkylphosphonium sulfonates and mixtures thereof, at a temperature of from about 80° to 130° C., at a pressure of from 210–2410 kPa gauge, and at a mol ratio at sulfur to transition metal of from about 0.1 to about 100.

4,465,862
CYCLOPENTENDIONE AND CYCLOPENTENONE

Kenji Saito, Toyonaka, and Hiroshi Yamachika, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 151,603, May 20, 1980, Pat. No. 4,371,711. This application Sep. 20, 1982, Ser. No. 420,082
Claims priority, application Japan, May 30, 1979, 54-67689; May 30, 1979, 54-67690; May 30, 1979, 54-67691; May 31, 1979, 54-68495
Int. Cl.³ C07C *49/597*
U.S. Cl. 568—379 2 Claims

1. A cyclopentendione compound represented by the formula,



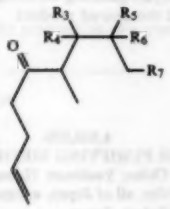
wherein R_1 is an alkyl, alkenyl, alkynyl, cycloakyl, thienyl, phenyl, p-methybenzyl or benzyl group.

4,465,863
BRANCHED C_{13}-ALK-1-EN-5-ONES, USE THEREOF IN PERFUMERY, PROCESS FOR PREPARING SAME AND INTERMEDIATES USED IN SAID PROCESS

Richard M. Boden, Ocean; Steven D. Temes, Hazlet; Theodore J. Tyszkiewicz, Sayreville, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 12, 1982, Ser. No. 441,375
Int. Cl.³ C07C *49/203*
U.S. Cl. 568—417 1 Claim

1. The compound defined according to the structure:



wherein R_3, R_4, R_5, R_6 and R_7 represent hydrogen or methyl with the provisos that:

(i) the sum total of the carbon atoms in R_3, R_4, R_5, R_6 and R_7 is three;

(ii) when R_7 is methyl and R_5 and R_6 are both methyl; and

(iii) when either R_3 or R_4 is methyl and R_7 is hydrogen.

4,465,864
PROCESS OF HYDROXYLATION OF AN AROMATIC CARBONYL COMPOUND

Geoffrey K. Cooper, Shelton, and Lewis G. Harruff, Grapeview, both of Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,543
Int. Cl.³ C07C *45/61, 37/00*
U.S. Cl. 568—433 11 Claims

1. A process for the hydroxylation of a phenolic carbonyl compound to the corresponding hydroxylated phenolic carbonyl compound comprising the sequential steps of

reacting the phenolic carbonyl compound in the presence of an aqueous solvent with at least one molar equivalent of an alkali metal triiodide salt, said aqueous solvent containing an alkali metal hydroxide and an acid catalyst, to form a reaction mixture containing the corresponding iodoaromatic compound and an iodide salt,

reacting said mixture, without separation of the iodoaromatic compound, with a hydroxylating agent comprising a hydroxide and a copper catalyst to form the correspond hydroxylated phenolic carbonyl compound and additional iodine salt,

separating said hydroxylated phenolic carbonyl compound from said iodide salt and recapturing said iodide salt for reuse in said process.

4,465,865

METHOD OF PREPARING TEREPHTHALIC ALDEHYDE AND ISOPHTHALIC ALDEHYDE

Fritz Engländer, Bonn, and Klaus-Dieter Steffen, Hennef, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 179,589, Aug. 21, 1980, abandoned.
This application Feb. 22, 1982, Ser. No. 350,905
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 2934614
Int. Cl.³ C07C 45/00
U.S. Cl. 568—436 9 Claims

1. A method for preparing terephthalic aldehyde or isophthalic aldehyde from p-xylene or m-xylene, which comprises chlorinating the side chain of p or m xylene to a chlorination degree of 2.5 to 3.5, said chlorination degree being defined as the number of chorine atoms in the side chain of a molecule or a mixture of said molecules, and thereafter contacting the so chlorinated product with hexamethylenetetramine which hexamethylenetetramine is present and is present in a stoichiometric excess of up to 30% in an aqueous solution which solution consists essentially of said chlorinated p or m-xylene, said hexamethylenetetramine and water, at 70° to 140° C. whereby the corresponding aldehyde is obtained.

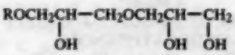
4,465,866

PREPARATION PROCESS OF 2-HYDROXY-3-ALKOXYPROPYLGLYCERYL ETHER

Naotake Takaishi, Utsunomiya; Kouichi Urata, Ichikai, all of, and Yoshiaki Inamoto, Utsunomiya, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

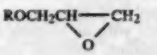
Filed May 5, 1982, Ser. No. 375,224
Claims priority, application Japan, May 28, 1981, 56-81456
Int. Cl.³ C07C 43/11; C07D 317/00
U.S. Cl. 568—618 5 Claims

1. A process for preparing a 2-hydroxy-3-alkoxypropylglyceryl ether represented by the general formula (IV):



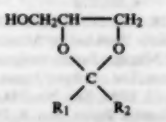
(IV)

wherein R is a saturated or unsaturated, straight or branched chain, aliphatic hydrocarbon group having 8–24 carbon atoms, which process comprises reacting in the presence of an acidic or basic catalyst an alkylglycidyl ether represented by the general formula (I):



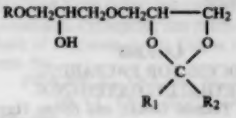
(I)

wherein R is as defined above with an acetal or ketal derivative of glycerol which derivative is represented by the general formula (II):



(II)

wherein R_1 and R_2 are individually a hydrogen atom or a lower alkyl, aryl or aralkyl group to obtain a 4-(2'-hydroxy-3'-alkoxy)propoxymethyl-1,3-dioxolane represented by the general formula (III):



(III)

wherein R, R_1 and R_2 are as defined above; and then subjecting the thus-obtained 4-(2'-hydroxy-3'-alkoxy)propoxymethyl-1,3-dioxolane to hydrolysis.

4,465,867

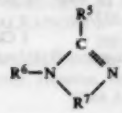
PROCESS FOR PREPARING O-METHALLYLOXYPHENOL

Tsukasa Maekawa; Takeshi Gondo; Shigeo Takahashi, and Hidetoshi Kume, all of Tokushima, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Jun. 11, 1982, Ser. No. 387,601
Claims priority, application Japan, Apr. 7, 1982, 57/58744
Int. Cl.³ C07C 41/16
U.S. Cl. 568—652 6 Claims

1. In the preparation of methallyloxyphenol and recovery and reuse of the iodide component of the catalyst,

A. reacting catechol and methallyl chloride in the presence of an alkali iodide catalyst selected from the group consisting of of KI and NaI and mixtures thereof, a base and an organic solvent or a mixture of an organic solvent and water, to provide a reaction mixture containing said alkali iodide catalyst, said base being selected from at least one of carbonates, bicarbonates and hydroxides of alkali metals or alkaline earth metals, cyclic amidines represented by the formula:



wherein R^5 and R^6 are each hydrogen or alkyl having 1 to 5 carbon atoms, or joined together to form alkylene having 2 to 11 carbon atoms, and R^7 being alkylene having 2 to 6 carbon atoms, and amines represented by the formula:

wherein R^8 and R^9 being each hydrogen, alkyl having 1 to 8 carbon atoms or cycloalkyl having 5 to 8 carbon atoms, or joined together to form alkylene having 5 to 8 carbon atoms, and R^{10} being hydrogen, alkyl having 1 to 8 carbon atoms or phenyl; and said organic solvent is a ketone represented by the formula:

R^1COR^2

wherein R^1 and R^2 being each alkyl having 1 to 6 carbon atoms or phenyl, or joined together to form alkylene having 4 to 8 carbon atoms, or aliphatic ester presented by the formula:

R^3COOR^4

wherein R^3 being hydrogen or alkyl having 1 to 8 carbon atoms, and R^4 being alkyl having 1 to 5 carbon atoms, and

B. selectively reacting methallyl chloride with said alkali

iodide catalyst in said reaction mixture to produce methallyl iodide for reuse.

4,465,868

PROCESS FOR PREPARING O-METHALLYLOXYPHENOL

Tsukasa Maekawa; Takeshi Gondo, and Syozo Hayase, all of Tokushima, Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Jun. 11, 1982, Ser. No. 387,602

Claims priority, application Japan, Jul. 17, 1981, 56-112823; Jul. 17, 1981, 56-112824; Mar. 16, 1982, 57-41872

Int. Cl.³ C07C *41/16*

U.S. Cl. 568—652 **17 Claims**

1. A process for preparing o-methallyloxyphenol characterized in that catechol and methallyl chloride are reacted with use of:

A. at least one base selected from among carbonates and bicarbonates of alkali metals, bicarbonates of alkaline earth metals and amines at least 10 in pKa,

B. at least one catalyst selected from among iodides of alkali metals or alkaline earth metals, hydrogen iodide and methallyl iodide, and

C. a ketone solvent in an amount of about 2 to about 10 parts by weight per part by weight of catechol.

4,465,869

PROCESS FOR THE PRODUCTION OF GLYCERYL ETHERS

Naotake Takaishi, Utsunomiya; Kouichi Urata, Ichikai, and Yoshiaki Inamoto, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

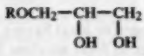
Continuation of Ser. No. 240,948, Mar. 5, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,296

Claims priority, application Japan, Mar. 21, 1980, 55-36348

Int. Cl.³ C07C *41/00*; C07D *317/00*

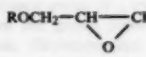
U.S. Cl. 568—672 **1 Claim**

1. A process for the production of an α-monoalkylglyceryl ether represented by the formula (III):



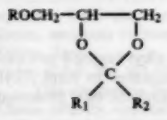
(III)

where R is a saturated or unsaturated, straight chain or branched chain aliphatic hydrocarbyl group having from 8 to 24 carbon atoms, which process is characterized in that an alkyl glycidyl ether represented by the formula (I):



(I)

where R is as defined above and a carbonyl compound of formula R_1COR_2 wherein R_1 is a hydrogen atom or hydrocarbyl group and R_2 is a hydrocarbyl group respectively are reacted in the presence of a Lewis acid catalyst, to obtain a 4-alkoxymethyl-1,3-dioxolan represented by the formula (II):



(II)

where R is as defined above, R_1 and R_2 are as defined above, and said alkoxymethyl-1,3-dioxolan is then hydrolyzed to said α-monoalkyl-glyceryl ether, said alkyl glycidyl ether and the carbonyl compound being reacted in a molar ratio of 1:1–30, the Lewis acid catalyst being employed in an amount of 0.001–0.2 mole per mole of alkyl glycidyl ether, and the reaction temperature being 0°–70° C.

4,465,870

ETHERIFICATION PROCESS WITH SORPTIVE TREATING OF HYDROCARBON RECYCLE STREAM

Lily E. Herskovits, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 11, 1982, Ser. No. 387,719

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—697 **4 Claims**

1. A process for the production of methyl tertiary butyl ether which comprises the steps of:

(a) contacting methanol and a mixed hydrocarbon stream comprising normal butane, isobutane and isobutylene with an acidic etherification catalyst to result in the production of methyl tertiary butyl ether, which is removed in a product stream and a recycle stream comprising isobutane, normal butene, water, butadiene, methanol and methyl tertiary butyl ether;

(b) withdrawing said recycle stream, which is rich in C_4 hydrocarbons, and comprises said isobutane, normal butene, water, butadiene, methanol and methyl tertiary butyl ether from the etherification zone;

(c) contacting said recycle stream with a sorbent solid selected from the group consisting of a Type 5A and Type 13X molecular sieve to remove said methanol and methyl tertiary butyl ether from the recycle stream;

(d) separating said recycle stream in a deisobutanizer into at least a first stream comprising isobutane which is passed into a dehydrogenation zone to produce isobutylene, said isobutylene being passed into said etherification zone of step (a); and,

(e) intermittently regenerating said Type 5A or Type 13X molecular sieve by contact with a regeneration gas stream consisting essentially of at least 85 mole percent hydrogen at an initial temperature of below 200° F. and gradually increasing said contact temperature at a rate less than about 50° F. until a temperature in excess of about 400° to 600° F. is reached.

4,465,871

PREPARATION OF 2-T-BUTYL-4-ALKOXY- AND 4-HYDROXYPHENOLS

Bruce E. Firth, Arlington Heights, Ill., and Terry J. Rosen, Berkeley, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 440,676, Nov. 10, 1982, Pat. No. 4,447,657. This application Aug. 8, 1983, Ser. No. 521,479

Int. Cl.³ C07C *39/04, 37/00*

U.S. Cl. 568—783 **17 Claims**

1. A method of rearranging a t-alkyl 4-alkoxyphenyl ether or a t-alkyl-4-hydroxyphenyl ether to a 2-t-alkyl-4-alkoxyphenol or a 2-t-alkyl-4-hydroxyphenol, respectively, comprising heating said ether in contact with an alumina selected from the group consisting of alumina, aluminas containing an alkali metal cation in the matrix, lithiated alumina, and silica-alumina at a temperature from about 65° C. to about 150° C. and recovering the formed phenol.

4,465,872

PROCESS FOR PRODUCING P-CRESOL

Takashi Suzuki; Shoichiro Hashimoto; Masami Orisaku, and Rieko Nakano, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 23, 1982, Ser. No. 391,445

Claims priority, application Japan, Sep. 8, 1981, 56-141378

Int. Cl.³ C07C *37/56*

U.S. Cl. 568—803 **11 Claims**

1. A process for producing p-cresol, which comprises oxidizing p-tolualdehyde in a formic acid solvent with hydrogen peroxide or performic acid, while maintaining a water content

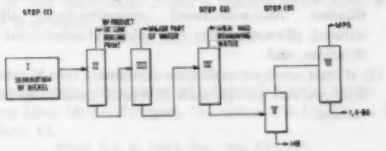
in the formic acid solvent of 3 to 15% by weight on the basis of formic acid, and at a reaction temperature at 50° to 150° C.

4,465,873

PROCESS FOR OBTAINING BUTANEDIOLS

Yoshiyuki Harano, Himeji, Japan, assignor to Daicel Chemical Industried, Ltd., Sakai and Kuraray Co., Ltd., Kurashiki, both of, Japan

Filed Jul. 6, 1983, Ser. No. 511,419
Claims priority, application Japan, Jul. 7, 1982, 57-117945
Int. Cl.³ C07C *29/80, 31/20, 29/88*
U.S. Cl. 568—868 **12 Claims**



1. In a process for the preparation of butanediols including the steps of hydroformylation of allyl alcohol, hydrogenation of an aqueous solution of the hydroformylated product and evaporation, in the presence of a nickel catalyst, to form an aqueous mixture containing 2-methyl-1,3-propanediol, 1,4-butanediol and a high-boiling fraction comprising substances having higher boiling points than said 2-methyl-1,3-propanediol and said 1,4-butanediol, the improvement which comprises:

(1) adjusting the pH of said aqueous mixture to 8.5 or above whereby to form a p and removing thus-formed precipitate from the mixture;

(2) then distilling off a fraction comprising water and residual 4-hydroxybutyraldehyde from said aqueous mixture at a temperature of up to 100° C.; and

(3) then heating the resulting mixture to a temperature of up to 180° C. and distilling off 1,4-butanediol and 2-methyl-1,3-propanediol therefrom.

4,465,874

HYDRATION OF OLEFINS

Joseph A. Kocal, Waukegan, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 3, 1983, Ser. No. 455,354
Int. Cl.³ C07C *29/04, 31/125*
U.S. Cl. 568—898 **3 Claims**

1. A process for the preparation of an alcohol by the hydration of an olefinic hydrocarbon selected from the group consisting of pentene-1, pentene-2, hexene-1, hexene-2 and hexene-3, which comprises treating said olefinic hydrocarbon with water at a temperature in the range of from about 100° to about 300° C., a pressure in the range of from about 10 to about 500 pounds per square inch gauge and a molar ratio of water to olefinic hydrocarbon in a range of from about 10:1 to about 50:1 moles of water per mole of hydrocarbon in the presence of a hydration catalyst selected from the group consisting of alpha-zirconium metaphosphate, alpha-zirconium pyrophosphate and ortho-zirconium hypophosphate to produce the resultant alcohol, which is recovered.

4,465,875

PROCESS FOR DEHYDRATING ETHANOL

Michael Greenbank, Coraopolis, and Michael R. Rosene, Pittsburgh, both of Pa., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed Sep. 27, 1982, Ser. No. 423,929
Int. Cl.³ C07C *29/77, 31/08*
U.S. Cl. 568—916 **7 Claims**

1. A process for dehydrating aqueous lower alkanol mixtures which comprises:

(a) passing said mixtures through carbon molecular sieves having average effective pore diameters within the range of about 2.0 to 5.0 Angstroms to adsorb the water onto said carbon molecular sieves; and subsequently

(b) removing said water from said carbon molecular sieves.

4,465,876

NITRATION OF AROMATICS WITH NITROGEN OXIDES IN TRIFLUOROACETIC ACID

Barton Milligan, Coplay, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 7, 1983, Ser. No. 464,240
Int. Cl.³ C07C *79/10*
U.S. Cl. 568—940 **10 Claims**

1. In a process for forming a nitroaromatic hydrocarbon by reacting nitrogen dioxide, an aromatic compound and trifluoroacetic acid in a vessel under conditions effective for forming said nitroaromatic, the improvement for enhancing the yield of said nitroaromatic product based upon said aromatic compound which comprises:

maintaining a molar ratio of at least 2:1 of said nitrogen dioxide to said aromatic during said reaction.

4,465,877

MAGNESIUM CATALYZED ALKOXYLATION OF ALKANOLS IN THE PRESENCE OF ALKOXYLATE REACTION ACTIVATORS

Charles L. Edwards, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 3, 1983, Ser. No. 519,884
Int. Cl.³ C07C *41/03*
U.S. Cl. 568—618 **20 Claims**

1. A process for the preparation of alkanol alkoxylates which comprises reacting, in a reaction mixture of basic pH, an alkanol reactant comprising one or more alkanols having carbon numbers in the range from about 8 to 18, inclusive, with an alkylene oxide reactant comprising one or more alkylene oxides having carbon numbers in the range from 2 to 4, inclusive, in the presence of a catalytically-effective amount of one or more soluble basic compounds of magnesium, and additionally in the presence of as reaction activator at least about 2.0 percent by mole, calculated on alkanol reactant, of one or more alkoxylates as are produced by the alkoxylation reaction of C_8 to C_{18} alkanols and C_2 to C_4 alkylene oxides.

4,465,878

PROCESS FOR PRODUCING 4',4-DIHYDROXYDIPHENYL

Takeshi Hashimoto; Terumasa Akashi, and Koji Nishihara, all of Wakayama, Japan, assignors to Sugai Chemical Industry Co., Ltd., Wakayama, Japan

Filed Jul. 21, 1982, Ser. No. 400,421
Claims priority, application Japan, Jul. 23, 1981, 56-114469
Int. Cl.³ C07C *37/04, 39/12*
U.S. Cl. 568—730 **16 Claims**

1. A process for producing 4,4'-dihydroxydiphenyl by fusing 4,4'-diphenyldisulfonic acid or a salt thereof in the presence of potassium hydroxide, which comprises,

subjecting at least one of 4,4'-diphenyldisulfonic acid and potassium 4,4'-diphenyldisulfonate to alkali fusion at a temperature of 280° to 330° C. with 4 to 10 mol of otassium hydroxide and 0.1 to 2 mol of potassium sulfate per

mol of the at least one 4,4'-diphenyldisulfonic acid and potassium 4,4'-diphenyldisulfonate,
dissolving the reaction mixture in water, and
adding an acid to the solution to crystallize 4,4'-dihydroxydiphenyl.

4,465,879

PROCESS TO INSECTICIDE INTERMEDIATE

Eric G. DelMar, Hopewell, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Aug. 19, 1983, Ser. No. 524,706
Int. Cl.³ C07C *17/26*
U.S. Cl. 570—190 **7 Claims**

1. A process for producing 3-chloro-2-methyl-[1,1'-biphenyl] which comprises cross-coupling a halobenzene with a solution of 3-halo-2-methylphenylmagnesium halide dissolved in an inert solvent in the presence of a catalytic amount of palladium metal under heterogeneous conditions.

4,465,880

PROCESS FOR THE MANUFACTURE OF METHYL CHLORIDE

Wolfgang Grünbein, Liederbach; Wilhelm Lendle, Bad Soden am Taunus; Hendrik W. Post, Hofheim am Taunus; Heinz Richter, Kronberg, and Manfred Rossberg, Waldems, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,395
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016220
Int. Cl.³ C07C *17/16*
U.S. Cl. 570—258 **4 Claims**

1. In a catalytic process for the manufacture of methyl chloride by a gaseous phase metathetical reaction of methanol and hydrogen chloride at elevated temperature and a pressure of at least 1 bar in the absence of metals of variable valency, the improvement which comprises reacting said methanol and hydrogen chloride in the presence of an aluminum oxide catalyst and an effective amount of oxygen or oxygen-containing gas in an amount of 1 to 80 liters of oxygen, as measured relative to 20° C. and 1 bar, per kilogram methanol wherein the useful life of said catalyst is increased and carbon precipitation is decreased.

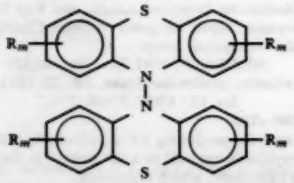
4,465,881

INHIBITING POLYMERIZATION OF VINYL AROMATIC MONOMERS

Richard F. Miller, Humble, and Michael P. Nicholson, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 8, 1983, Ser. No. 530,294
Int. Cl.³ C07C *7/18*
U.S. Cl. 585—2 **8 Claims**

1. A composition comprised of a vinyl aromatic compound and, in an amount effective to inhibit polymerization of said vinyl aromatic compound, at least one derivative of phenothiazine having the structural formula



wherein the R's may be the same substituent or different substituents selected from alkyl groups having 1 to 20 carbon atoms, halogen atoms, halogen-substituted alkyl groups having 1 to 20 carbon atoms and mixtures of these and the m's may be the same integer or different integers in the range of 0 to 4.

4,465,882

INHIBITING POLYMERIZATION OF VINYL AROMATIC MONOMERS

Richard F. Miller, Humble, and Michael P. Nicholson, Houston, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 8, 1983, Ser. No. 530,295
Int. Cl.³ C07C *7/18*
U.S. Cl. 585—4 **10 Claims**

1. A composition comprised of a vinyl aromatic compound and, in an amount effective to inhibit polymerization of said vinyl aromatic compound, a combination of
(1) at least one member selected from N,N' dimers of phenothiazine, halo-substituted phenothiazines, alkyl-substituted, phenothiazines and haloalkyl-substituted phenothiazines, and
(2) at least one hydroxylamine containing two N-substituted hydrocarbon groups each of which contains an aromatic radical.

4,465,883

BULLET LUBRICANT AND METHOD OF COATING BULLETS WITH SAID LUBRICANT TO REDUCE THE LEADING EFFECT THEREOF ON THE BORES OF FIREARMS

Frances G. Lopata, Clayton, Mo., and Venkataramaraj S. Urs, Godfrey, Ill., assignors to Olin Corporation, Stamford, Conn.

Filed Aug. 12, 1982, Ser. No. 407,392
Int. Cl.³ C10L *1/16*
U.S. Cl. 585—9 **9 Claims**

1. A bullet lubricant which comprises from about 3 to about 15 percent by weight of low molecular weight polyethylene in a wax base, said lubricant having a melting point in excess of 180° F.

4. A method of lubricating a bullet, which method comprises the steps of:
(a) heating the bullet to a temperature within the range of from about 180° F. to about 330° F.;
(b) heating a lubricant mix comprising from about 3 to about 15 percent weight of of low molecular weight polyethylene in a wax base to a temperature within the range of from about 250° F. to about 300° F.;
(c) coating said heated bullet with said heated lubricant mix;
(d) removing excess lubricant from said bullet; and
(e) cooling said coated bullet to a temperature below the melting point of the wax base to solidify said coating.

4,465,884

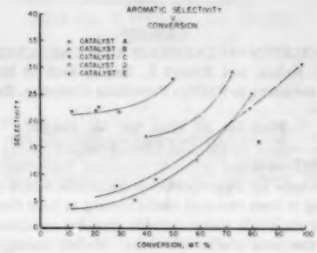
OLEFIN PROCESSING

Thomas F. Degnan, Yardley, Pa., and Leonard R. Koenig, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,954
Int. Cl.³ C07C *12/02*
U.S. Cl. 585—415 **10 Claims**

1. A process for converting feedstock comprising C_3^+ olefins to product comprising non-aromatic hydrocarbons of higher molecular weight than feedstock olefins and aromatic hydrocarbons comprising contacting said feedstock in the

absence of added hydrogen at conversion conditions with a catalyst comprising a crystalline zeolite having a Constraint



Index of less than about 2 and a silica/alumina mole ratio greater than about 100.

4,465,885

SOLID PHOSPHORUS FLUORIDE CATALYSTS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 8, 1983, Ser. No. 512,275
Int. Cl.³ C07C *2/68, 2/02*
U.S. Cl. 585—466 **9 Claims**

1. A hydrocarbon conversion process which comprises contacting a convertible hydrocarbon with a catalytic composition of matter comprising a phosphorus fluoride composited on a high surface area metal oxide support at conversion conditions, and recovering the resultant converted hydrocarbon.

2. The process as set forth in claim 1 in which said hydrocarbon conversion process is an alkylation process, said convertible hydrocarbons are benzene and propylene and said converted hydrocarbon is isopropylbenzene.

3. The process as set forth in claim 1 in which said high surface area metal oxide is an alumina.

4,465,886

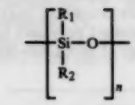
SILICA-MODIFIED CATALYST AND USE FOR SELECTIVE PRODUCTION OF PARA-DIALKYL SUBSTITUTED BENZENES

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,868
The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.
Int. Cl.³ C07C *3/52, 3/62*
U.S. Cl. 585—467 **20 Claims**

1. A conversion process which comprises contacting a feedstock selected from the group consisting of toluene, ethylbenzene, propylbenzene, butylbenzene and mixtures thereof, at conversion conditions including a temperature of from about 250° C. to about 750° C., a pressure of from about 0.1 atmosphere to about 100 atmospheres and a feedstock weight hourly space velocity of from about 0.1 to about 2000, with catalyst composition comprising

a crystalline zeolite having deposited thereon a coating of silica which extensively covers and resides substantially exclusively on the external surface thereof as a result of contact of a crystalline zeolite, having hydrophobic properties after heating same at 540° C. for one hour in an inert atmosphere, with an aqueous emulsion of a silicon-containing compound of a molecular size substantially incapable of entering the pores of the zeolite at a temperature of from about 10° C. to about 200° C. for a time sufficient to permit from about 0.5 weight percent to about 30 weight percent silica to be deposited on the crystalline zeolite upon heating in an oxygen-containing atmosphere at a temperature of from 300° C. to about 700° C., said silicon-containing compound having the general formula:



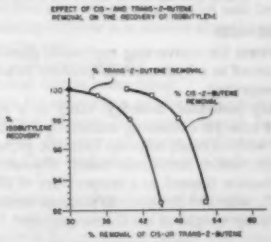
where R_1 is hydrogen, fluorine, hydroxy, alkyl, aralkyl, alkaryl, or fluoro-alkyl, the hydrocarbon substituents containing from 1 to 10 carbon atoms, R_2 is selected from the same group as R_1, other than hydrogen and other than methyl if R_1 is hydrogen, and n is an integer of at least 10, said crystalline zeolite being characterized by an activity, in terms of alpha value, of between about 2 and about 5000, a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho-xylene sorptin time for 30 percent of said capacity greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a pressure of 4.5±0.8 mm. of mercury, and recovering a resulting product comprising dialkyl substituted benzenes wherein the amount of para-isomer thereof is in excess of normal equilibrium concentration.

4,465,887

PROCESS FOR PRODUCING BUTYLENE POLYMERS HAVING MOLECULAR WEIGHTS IN THE RANGE OF FROM ABOUT 400 TO 5000 MOLECULAR WEIGHT

Wayne P. Schammel, Bartlett, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 27, 1983, Ser. No. 508,334
Int. Cl.³ C07C *2/02*
U.S. Cl. 585—517 **4 Claims**



1. A process for preparing isobutylene polymers from a hydrocarbon feed stream comprising a C_4–C_5 hydrocarbon mixture containing up to 12(wt)% cis-2-butene, up to 15(wt)% trans-2-butene and up to 35% (wt)% isobutylene, which method comprises:

(a) fractionating said feed stream comprising said C_4–C_5 hydrocarbon mixture to remove no more than about 50(wt)% of said cis-2-butene of said C_4–C_5 hydrocarbon mixture;

(b) reacting in liquid phase the overhead fraction from said fractionating of said feed stream comprising said C_4–C_5 hydrocarbon mixture containing isobutylene and an aluminum chloride catalyst at a temperature of from about 0° F. to about 75° F. to polymerize said isobutylene and form a reaction mixture consisting of isobutylene polymers of molecular weight of from 900 to about 5000 and unreacted hydrocarbons including butene-1, cis-2-butene and trans-2-butene;

(c) flash distilling said reaction mixture to recover polybutene polymers of molecular weights of from about 900 to about 5000 from unreacted hydrocarbon mixture fraction (ii);

(d) reacting in liquid phase said fraction (ii) with a catalyst system consisting of aluminum chloride and a promoter at a temperature of from about 30° F. to about 140° F. to polymerize butylenes in said fraction (ii) and form a reaction product mixture containing butylene polymers; and

(e) separating polybutene-1 polymers having the molecular weights in the range of about 400–900 from said product mixture.

4,465,888

OLIGOMERIZATION OF OLEFINS IN SUPERCRITICAL WATER

Stephen C. Paspek, Jr., North Royalton, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 14, 1983, Ser. No. 485,094
Int. Cl.³ C07C *3/02*
U.S. Cl. 585—520 **15 Claims**

1. A process for the oligomerization of olefins containing five or less carbon atoms to produce liquid hydrocarbons containing four to twenty carbon atoms, the process comprising contacting the olefins with a water containing medium at a temperature of greater than 200° C. and a pressure from 0 to 7,000 psi whereby the temperature and pressure are sufficient to maintain the mixture of olefins and water containing medium about at or above the critical temperature and pressure of the mixture.

4,465,889

CATALYTIC CONVERSION OF METHANOL, DIMETHYL ETHER AND MIXTURES THEREOF TO A HYDROCARBON PRODUCT RICH IN ISO-C_4 COMPOUNDS AND NEW CATALYSTS THEREFOR

Rayford G. Anthony, Bryan, Tex., and P. E. Thomas, Thottakad, India, assignors to Summit Gas Systems Pte. Ltd., Jurong, Singapore

Filed Jul. 2, 1982, Ser. No. 394,795
Int. Cl.³ C07C *1/22*
U.S. Cl. 585—640 **21 Claims**

1. A process for converting methanol, dimethyl ether or a mixture thereof to a hydrocarbon product rich in iso-C_4 compounds comprising

contacting methanol, dimethyl ether or a mixture thereof with a catalyst consisting essentially of silicalite impregnated with an oxide selected from the group consisting of thorium oxide, zirconium oxide, titanium oxide, and a combination thereof, at a temperature of about 300° C. to 550° C., whereby the gaseous product contains about 20% to 50% by weight of iso-C_4 compounds.

4,465,890

METATHESIS PROCESS AND CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1983, Ser. No. 477,466
Int. Cl.³ C07C *6/04*
U.S. Cl. 585—646 **9 Claims**

1. A process comprising contacting a feed with a catalyst under conditions sufficient to effect metathesis; wherein said feed is characterized by olefinic unsaturation or acetylenic unsaturation; and wherein said catalyst comprises supported tungsten oxide treated with a treating agent; wherein said treating agent is selected from elemental tungsten, elemental silicon, elemental antimony and any mixture of two or more thereof.

4,465,891

OLEFIN METATHESIS AND CATALYST

Simon G. Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1983, Ser. No. 518,557
Int. Cl.³ C07C *6/00*
U.S. Cl. 585—646 **10 Claims**

1. A process for disproportionating olefins which comprises contacting at least one feed olefin having at least three carbon atoms per molecule under suitable reaction conditions which convert the feed olefin into other olefins having different numbers of carbon atoms with a catalytically effective amount of a catalyst containing silicon and at least one of tungsten, molybdenum and rhenium produced by

(a) combining the metal or a metal compound of said metals with a halosilane compound, and

(b) adding either water or silica to (a), and

(c) heating (b) to a temperature sufficient to activate and form a metal/silicon-containing catalyst active for the disproportionation of olefins.

4,465,892

ISOMERIZATION OF PARAFFINS OR OLEFINS WITH BRIDGED CLAYS

Pierre Jacobs, 6, Populieren Straat, 1686 Goik; Georges Poncelet, 15, rue de Wavre, 5998 Beauvechain, and Alain Schutz, 4, rue Godincourt, 6778 Musson, all of Belgium

Division of Ser. No. 411,769, Aug. 26, 1982. This application Oct. 3, 1983, Ser. No. 538,085
Claims priority, application France, Aug. 27, 1981, 81 16387
Int. Cl.³ C07C *5/13, 5/22*
U.S. Cl. 585—666 **14 Claims**

1. In the isomerization of hydrocarbons chosen from the group consisting of paraffins and olefins, the improvement comprising the use at a temperature ranging from 100° C. to 300° C. of a catalyst which comprises an element from group VIII of the periodic table of the elements and a bridged clay prepared by the process comprising subjecting a mixture of an aqueous solution of at least one metal hydroxide and an aqueous clay suspension to dialysis.

4,465,893

OXIDATIVE CONDENSATION OF NATURAL GAS OR METHANE INTO GASOLINE RANGE HYDROCARBONS

George A. Olah, 2252 Gloaming Way, Beverly Hills, Calif. 90210

Filed Aug. 25, 1982, Ser. No. 410,131
The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.
Int. Cl.³ C07C *3/44*
U.S. Cl. 585—709 **13 Claims**

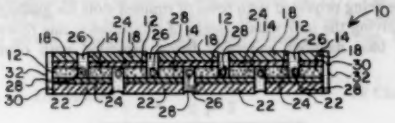
1. A process for the heterogeneous gas-phase conversion of methane into gasoline-range hydrocarbons by condensing a gaseous feed comprising methane or natural gas in the presence of a solid superacid catalyst.

4,465,894

SUBSTRATELESS THERMOELECTRIC DEVICE AND METHOD OF MAKING SAME

Jaime M. Reyes, Birmingham, Mich., assignor to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Apr. 7, 1983, Ser. No. 482,826
Int. Cl.[3] H01L 35/28
U.S. Cl. 136—225 21 Claims



1. A thermoelectric device of the type which provides electrical energy in response to a temperature gradient applied across the device, said device providing increased conversion efficiency and comprising:

a plurality of thermoelectric elements arranged in spaced apart relation;

coupling means for electrically coupling said elements in a predetermined pattern; and

encapsulant means including an encapsulant material covering the exposed surfaces of said elements, said encapsulant forming void spaces between said elements for providing effective thermal insulation between said elements and confining substantially all of the heat flow from said temperature gradient to through said elements.

4,465,895

THERMOELECTRIC DEVICES HAVING IMPROVED ELEMENTS AND ELEMENT INTERCONNECTS AND METHOD OF MAKING SAME

Dalton R. Verner, Orchard Lake, and Donald L. Heath, Leonard, both of Mich., assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Jun. 1, 1983, Ser. No. 499,998
Int. Cl.[3] H01L 35/28
U.S. Cl. 136—225 42 Claims

1. In a thermoelectric device including at least two thermoelectric elements formed from powders compressed in a first direction, and coupling means for establishing a current path through said elements; the improvement comprising:

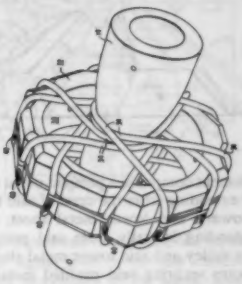
said elements and said coupling means being arranged for establishing said current path through said elements in a second direction substantially perpendicular to said first direction.

4,465,896

FILAMENTARY TENSIONED INSULATING SUPPORT FOR A HIGH VOLTAGE CONDUCTOR AND METHOD OF MAKING SAME

Roy E. Wootton, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 29, 1982, Ser. No. 445,595
Int. Cl.[3] H02G 5/06; H01B 9/04, 9/06, 13/00
U.S. Cl. 174—28 30 Claims



15. A method of forming an electrical insulator between an electrical conductor and a support member, comprising the steps of:

(a) securing said conductor at a predetermined location within said support member by means of a removable jig;

(b) securing one end of a flexible electrical insulating member to said support member;

(c) placing the remainder of said flexible electrical insulating member under tension;

(d) wrapping said flexible insulating member around said conductor and said support member in a predetermined geometric arrangement;

(e) securing the other end of said flexible electrical insulating member to said support member so that said flexible electrical insulating member is in tension along its entire longitudinal length; and

(f) removing said removable jig.

27. An electrical device comprising:

support means for supporting an electrical conductor;

a first conductor adapted for connection to an electrical potential and disposed interiorly within said support means, said first conductor having a reduced diameter portion thereof; and

a flexible insulating member disposed between said support means and said first conductor reduced diameter portion suspending said first conductor within said support means, said flexible insulating member being tensioned to a predetermined amount greater than the tension caused by suspending the weight of the first conductor alone.

4,465,897

THREE-SERVICE WIRE DISTRIBUTING UNIT AND OUTLET MEANS THEREFOR

Raymond E. Albrecht, Sewickley, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed May 10, 1982, Ser. No. 376,913
Int. Cl.[3] H02G 3/26
U.S. Cl. 174—48 20 Claims

1. An electrical wiring distributing metal cellular flooring unit comprising:

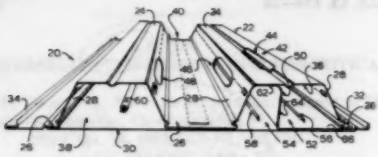
a corrugated upper metal sheet presenting alternating coplanar crests and coplanar valleys and webs connecting adjacent ones of said crests and said valleys, and a correlative lower metal sheet secured to said upper metal sheet along contiguous portions thereof, said flooring unit presenting generally parallel cells separated by a lengthwise trough, said trough comprising a valley and confronting webs connecting said valley to said coplanar crests;

a set of access openings in adjacent cells including a crest

access opening in the crest of a first cell, and opposed first and second web access openings in the confronting webs of said first cell and a second cell respectively;

a distinct partitioning element substantially coextensive in length with said first cell, dividing said first cell into a first subcell including said crest access opening and a second subcell including the first web access opening, said partitioning element comprises a profiled metal sheet including a portion extending from the crest of said first cell downwardly toward said lower metal sheet; and a bottom flange extending laterally from said portion outwardly between a valley and said lower metal sheet; and

securing means securing said profiled metal sheet to said floor unit.

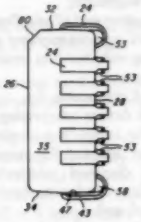


4,465,898

CARRIER FOR INTEGRATED CIRCUIT

John W. Orcutt, Garland, and Richard M. Hardin, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 27, 1981, Ser. No. 286,910
Int. Cl.³ H05K 5/00
U.S. Cl. 174—52 FP **2 Claims**



1. A carrier for an integrated circuit comprising:

(a) an enclosure having said integrated circuit disposed therein and a top, bottom, and four flat lateral sides, and provided with a plurality of protuberances along each lateral side;

(b) a plurality of leads, at least one lead extending from an end thereof located in said enclosure through each lateral side and along said lateral side toward said bottom, each lead extending over one of said protuberances and spaced from an adjacent lead by a distance within the range of substantially equal to the width of said lead to less than the width of said lead.

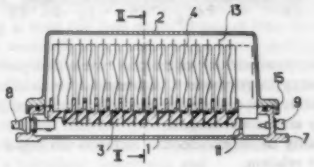
4,465,899

BOX FOR TRANSMISSION LINE REPEATERS

Bernard Mauclere, Maurepas, and Daniel Jamet, Nozay, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 7, 1982, Ser. No. 376,050
Claims priority, application France, May 7, 1981, 81 09072
Int. Cl.³ H05K 5/00
U.S. Cl. 174—52 R **6 Claims**

1. In combination, a repeater box, a plurality of transmission line repeaters having individual casings, a transmission cable formed of wires, said repeater box comprising a shallow bowl having at least one cable inlet for the transmission cable and means for providing sealing thereto; a mother board supporting the individual casings of transmission line repeaters and comprising a generally planar electrically insulating base member and connector tabs passing therethrough, said base member being fixed in said bowl while leaving a space between its underside and the bottom of the bowl for wiring the transmission cable to said connector tabs, the base member upper surface being provided with rows of rimmed slots for guiding and receiving the individual casings of transmission line repeaters, the base member underside being provided with channels



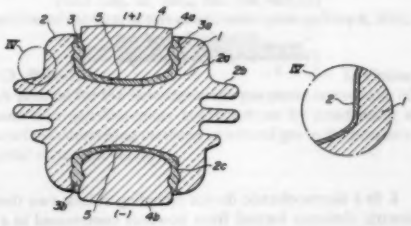
between said rows of slots, in which channels the wires of the transmission cable are laid on their path between said cable inlet and their destination connector tabs, said connector tabs passing through the base member at the bottoms of the slots and providing cable connector terminals on the underside of the base member and electrical contacts engaging matching contacts placed on a facing end surface of said individual casing; and said repeater box further comprising a bell-shaped cover hermetically sealed to the bowl and having a sufficient inside volume to contain the individual casings of transmission line repeaters when assembled on the mother board.

4,465,900

HIGH VOLTAGE GLAZED PORCELAIN INSULATORS

Yoshio Mitsumatsu, Chita, and Shoji Seike, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Apr. 21, 1983, Ser. No. 487,029
Claims priority, application Japan, Mar. 16, 1983, 58-42418
Int. Cl.³ H01B 17/60, 3/12
U.S. Cl. 174—209 **4 Claims**

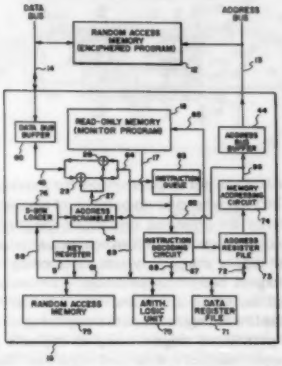


1. A high voltage porcelain insulator, comprising a porcelain body, and a glaze applied on at least a surface of the porcelain body, wherein said porcelain body has a specific resistivity ρ_p of $\rho_p \geqq 5.0 \times 10^{13}$ Ω·cm, and said glaze has a specific resistivity ρ_g of $\rho_g < \rho_p$

4,465,901
CRYPTO MICROPROCESSOR THAT EXECUTES ENCIPHERED PROGRAMS

Robert M. Best, 16016 9th Ave. NE., Seattle, Wash. 98155

Continuation of Ser. No. 044,952, Jun. 4, 1979, Pat. No. 4,278,837, which is a continuation-in-part of Ser. No. 927,580, Jul. 24, 1978, abandoned, which is a continuation of Ser. No. 750,009, Dec. 13, 1976, abandoned, said Ser. No. 044,952, is a continuation-in-part of Ser. No. 846,638, Oct. 31, 1977, Pat. No. 4,168,396. This application Jul. 2, 1981, Ser. No. 279,833
The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.
Int. Cl.³ G06K 5/00; H04L 9/00
U.S. Cl. 178—22.08 30 Claims



1. A method of protecting a program of executable instructions during execution, comprising the steps of:

storing said program in enciphered form as a plurality of addressable portions;

generating a digital address for addressing a portion of said enciphered program;

cryptographically scrambling together said addressed portion and said digital address to produce an executable portion of an instruction in said program;

executing said instruction; and

addressing a subsequent portion of said enciphered program in accordance with said executed instruction.

4,465,902
DIGITAL SPACE PHONE SYSTEM

Thomas J. Zato, Palatine, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 8, 1982, Ser. No. 433,344
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2 TV 10 Claims

1. A television receiver having two-way telephone communication capability comprising:

a talk channel and a listen channel coupled to a telephone line, said telephone line introducing substantial cross coupling between said channels;

an A/D converter in each said channel for digitizing signals in said channels;

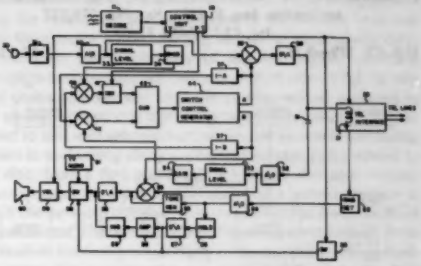
a gain controlled amplifier in each said channel; and

channel control means for selectively controlling the gains of said channel as a function of the difference in signal levels in said channels and for offsetting cross coupled signals in said channels, said channel control means including;

differential means comparing the signal levels in the channels and developing an output as a function of the comparison;

a switch control generator for adjusting the gains of the channels in accordance with the output of the differential means; and

a variable gain amplifier, associated with each channel and having an output coupled to a respective input of the

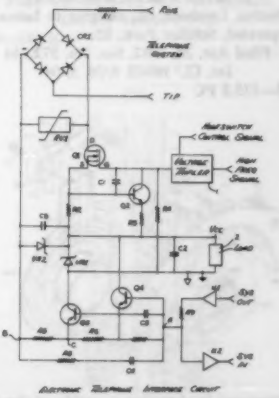


differential means and two inputs, one input being responsive to the signal level in the talk channel and another input being responsive to the signal level in the listen channel.

4,465,903
ELECTRONIC TELEPHONE INTERFACE CIRCUIT

Andrew C. Barber, Santa Monica, Calif., assignor to Ixo, Inc., Culver City, Calif.

Filed Apr. 21, 1983, Ser. No. 487,223
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2 C 7 Claims



1. An interface circuit for coupling an electronic system to a telephone line, comprising:

(a) an inductorless electronic gyrator coupled in series with the telephone line, for providing a low impedance DC signal path through the interface circuit, and for providing a higher impedance signal path for AC signals from or to the telephone line; and

(b) a signal coupler means, coupled to the higher impedance signal path of the gyrator and to the electronic system, for converting the impedance of the electronic system for AC signals from the telephone line to the electronic system, and for converting the impedance of the telephone line for AC signals from the electronic system to the telephone line, and for voltage conversion of AC signals from the telephone line to the electronic system and from the electronic system to the telephone line.

4,465,904

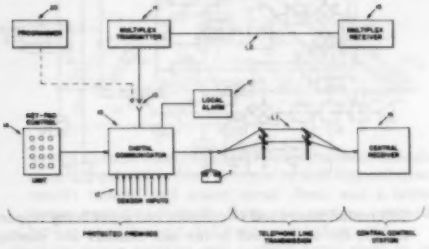
PROGRAMMABLE ALARM SYSTEM

Ronald B. Gottsegen, 24900 Pine Hills Dr., Carmel, Calif. 93923, and John G. Pate, 1180 Sylvan Pl., Monterey, Calif. 93940

Continuation of Ser. No. 947,263, Sep. 29, 1978, abandoned. This application Jun. 8, 1981, Ser. No. 271,227

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—5 R **14 Claims**



12. In an alarm system,

a communicator unit including a memory unit and at least one alarm sensor unit constituting a loop sensor circuit having alarm, trouble, and normal operating states, and

a programmer unit detachably connected to said communicator unit and arranged to program said memory unit and sensor circuit for selected operating states.

4,465,905

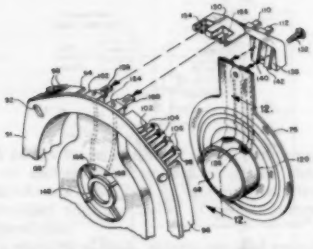
LOUDSPEAKER ASSEMBLY

Melvin S. Nation, Lombard, Ill., assignor to International Jensen Incorporated, Schiller Park, Ill.

Filed Apr. 28, 1982, Ser. No. 372,744

Int. Cl.³ H04R *9/06, 9/04*

U.S. Cl. 179—115.5 PC **20 Claims**



1. In an improved loudspeaker assembly of the type having a magnet supported by a basket, a voice coil movable axially within an annular gap of the magnet, and a diaphragm fixed to the voice coil for movement with the voice coil, the improvement comprising:

means for defining a recess within the basket for receiving the magnet so as to enclose a portion of the magnet; and

a lock member in mechanical engagement with the basket so as to further enclose the magnet and lock the magnet in position by pressure against the magnet, one of said basket and lock member defining at least one resilient locking projection and the other of said basket and lock member defining a mating locking surface, said locking projection positioned and configured automatically to bend away from the mating locking surface during assembly of the basket and lock member and automatically to spring back into mechanical engagement with the mating locking surface when the basket and lock members are assembled.

4,465,906

LOW-LEAKAGE POT MAGNET SYSTEM FOR MOVING-COIL LOUDSPEAKERS

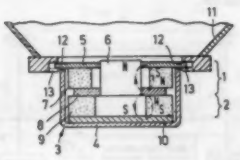
Kurt Adolph, and Winfried Grimbach, both of Bonn, Fed. Rep. of Germany, assignors to Magnetfabrik Bonn GmbH Vormals Gewerkschaft Windhorst, Bonn am Rhein, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,376

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150041

Int. Cl.³ H01F *7/00*

U.S. Cl. 179—115.5 SF **9 Claims**



1. In a low-leakage pot magnet system for moving-coil loudspeakers of the type wherein two permanent magnet systems of opposite polarity are arranged, one above the other, within a screen pot enclosure made of a ferromagnetic material such as soft iron, the upper magnet system comprising an annular permanent magnet body concentrically surrounding an axial pole core and including upper and lower radially extending pole plates, the lower magnet system comprising an annular, or disk-shaped, permanent magnet body of opposite polarity to that of the upper magnet system and separated therefrom by said lower pole plate, the improvement which comprises spacer means to position the lower magnet system axially away from the bottom of the screen pot enclosure.

4,465,907

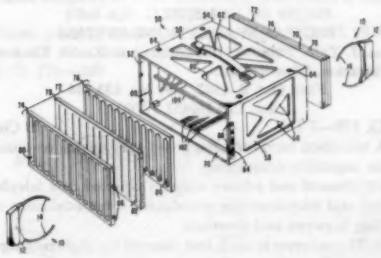
HEADSET RECEIVER AND SANITIZING STORAGE SYSTEM THEREFOR

Ronald J. Minear, Huntington Beach; Harvey F. Brion, Mission Viejo, and William H. Terbrack, Irvine, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 2, 1982, Ser. No. 354,101

Int. Cl.³ H04M *1/05;* H04B *9/00*

U.S. Cl. 179—156 R **27 Claims**



1. The combination of a headset receiver and storage system therefor for use in an aircraft passenger entertainment system comprising:

a housing including means for receiving electromagnetic signals and for converting the electromagnetic signals into audible signals;

means coupled to said housing for supplying the audible signals to a listener's ears; and

a case having at least one port for receiving and storing said

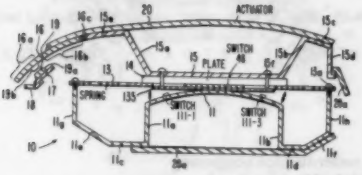
housing in said case, and sanitizing means positioned adjacent said port for sanitizing said housing and said audible signal supplying means when received in said case.

4,465,908

HAND CONTROLLER

William M. Griffith, 131 Stanford Ave., Menlo Park, Calif. 94025; Gordon H. May, 3365 Sudbury Rd., Cameron Park, Calif. 95682, and David D. Thornburg, P.O. Box 1317, Los Altos, Calif. 94022

Filed Aug. 16, 1982, Ser. No. 408,326
Int. Cl.³ H01H *9/00, 13/00, 25/00*
U.S. Cl. 200—5 R **9 Claims**



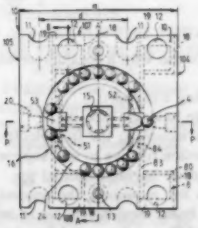
1. A hand-operable controller comprising
a spherical surface mounted on a base;
a flat plate mounted above said spherical surface and adapted to be rocked by an operator's hand in a slip-proof manner over said spherical surface;
spaced switch means extending between said spherical surface and said plate actuatable to produce signals for indicating the direction of rocking movement of said plate with respect to said spherical surface; and
a flat spring means extending between said spherical surface and said flat plate and deflectable upon plate movement for restoring said flat plate to its nominal position in the absence of a disturbing rocking force applied to said flat plate.

4,465,909

SWITCHING DEVICE AND ITS USE IN A SELECTOR SWITCH OR A PROGRAM CONTROL APPARATUS

Michel Naulin, Angouleme, and Michel Gendre, L'Isle d'Espagnac, both of France, assignors to La Telemecanique Electrique, France

Filed Aug. 30, 1982, Ser. No. 413,183
Claims priority, application France, Sep. 1, 1981, 81 16624
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—5 R **6 Claims**



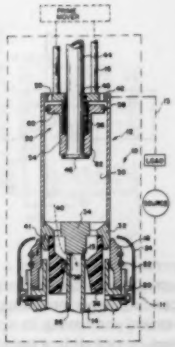
1. A multi-position electrical switching unit comprising: a casing having top and bottom substantially parallel walls and top and bottom cylindrical bores respectively provided in said top and bottom walls; said top and bottom bores respectively having coaxially arranged cylindrical surface portions; a shaft rotatively mounted in the top bore and extending within the casing; a disc integrally located in the bottom bore and coaxially connected to the shaft, said disc having, on an inner face thereof, a plurality of peripheral regularly distributed cavities; an annular track arranged within said casing in a plane parallel to said disc; a plurality of individually removable interlocking members adapted to be retained in the respective cavities and, when the disc is rotated, to be subjected to a circular translational motion from one position to another, while being guided along the cylindrical surface portion of the bottom bore and along the annular track; indexing means for sequentially driving the shaft into a plurality of indexed angular positions through successive steps of rotation; at least one switch having fixed contact means and movable contact means mounted in said casing; at least one operating member mechanically connected to said movable contact means and mounted for sliding motion in said casing along a direction substantially parallel to said disc, from a first position in which the movable contact means engages the fixed contact means to a second position in which the movable contact means is disengaged from the fixed contact means, the operating member being more remote from the shaft in the first position than in the second position; resilient means for resetting the operating member into the first position, the operating member having a projecting surface portion which is in register with one specific cavity for each of the said indexed angular positions of the shaft, said projecting surface portion being so shaped as to abut against the interlocking member when the interlocking member is present in the said specific cavity and thus assume its second position and to be reset into its first position when no interlocking member is present in the said specific cavity.

4,465,910

SELF-GENERATING GAS FLOW INTERRUPTER

Donald R. Martin, Racine, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 20, 1982, Ser. No. 420,038
Int. Cl.³ H01H *33/00*
U.S. Cl. 200—148 R **8 Claims**



1. An interrupter, comprising:
a. a fixed guide defining an end element disposed generally at right angles to the longitudinal axis of the guide;
b. a generally hollow movable cylinder, which is coaxially disposed about said guide, having at one end a wall element sealingly disposed about said guide and having at the other end an opening, said cylinder being adapted to be connected to a prime mover so as to be movable along the axis of said guide between a raised and a lower position and being filled with an arc extinguishing fluid;
c. a piston, coaxially disposed about said guide and at the interior of said cylinder, which is axially and sealingly movable along said guide between a first position defined adjacent said opening by said end element and a second position defined by said wall element so as to define a

variable volume chamber within said cylinder whose interior volume varies in response to the axial movement of said piston relative to said guide;

d. arc means for producing an electric arc at a site adjacent said cylinder opening, whereby the pressure of the fluid at the interior of said chamber increases when an arc is produced; and

e. biasing means, disposed between said cylinder wall element and said piston, for biasing said piston against said end element,

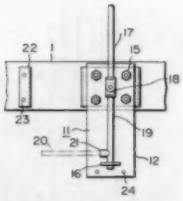
said biasing means being selected to apply a sufficiently high force against said piston to keep said piston against said end element when said cylinder is moved away from said arc site in the absence of an arc, whereby the interior volume of said chamber varies directly in response to the movement of said cylinder, said biasing means being selected to apply a sufficiently low force against said piston such that said biasing means is overcome by the energy released from said arc site when said energy is in excess of a predetermined amount, whereby the interior volume of said chamber varies in response to the movement of said cylinder and the movement of said piston relative to said fixed guide.

4,465,911

SWITCH OPERATING APPARATUS FOR A MOVABLE ELECTRIC DEVICE

Kenichi Ootsuka, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,421
Claims priority, application Japan, Jan. 7, 1983, 58-1355
Int. Cl.³ H01H *3/20*
U.S. Cl. 200—331 **5 Claims**



1. A switch operating apparatus for a disconnecting switch of a movable electric device carried on a vehicle comprising:

a vertically extending upper operating rod with at least the lower part vertical and having its upper end connected to said disconnecting switch in a manner such that rotation of said upper operating rod around its longitudinal axis can operate said disconnecting switch;

a lower operating rod;

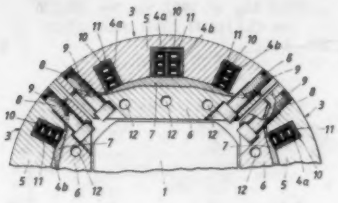
a flexible coupling connected to the lower end of said upper operating rod and to the upper end of said lower operating rod for transmitting rotational movement of said lower operating rod about the longitudinal axis thereof to said upper operating rod to rotate said upper operating rod around its longitudinal axis and for permitting said lower operating rod to pivot with respect to said upper operating rod about a horizontal axis perpendicular to a longitudinal axis of the vehicle between a horizontally-extending storage position and a downward-extending operating position, and means for detachably holding said lower operating rod in the storage position.

4,465,912

COILER-FURNACE COMBINATION

Franz Brettbacher, Linz; Karl Moshammer, Leonding; Ernst Rom, St.Veit a.d.Glan, and Franz Hirschmanner, Leonding, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 12, 1982, Ser. No. 397,582
Claims priority, application Austria, Aug. 24, 1981, 3670/81
Int. Cl.³ H05B *5/08*
U.S. Cl. 219—10.49 A **9 Claims**



1. A coiler-furnace comprising

a heat-shielding hood and

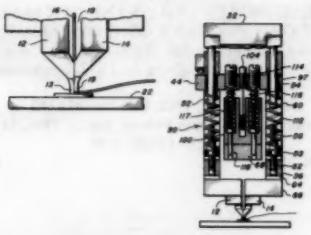
a coiler having an expanding coiler mandrel comprising expanding segments and rotatably mounted in the heat-shielding hood for coiling a hot-rolled strip, the mandrel incorporating an electrically energizable heating winding carried by said expanding segments and comprising a plurality of inductor coils for heating the coiler strip.

4,465,913

PARALLEL GAP WELDER

Philip T. Stokoe, North Attleboro, Mass., and Guy A. Gervais, Manville, R.I., assignors to Augat Inc., Mansfield, Mass.

Filed Oct. 6, 1981, Ser. No. 309,049
Int. Cl.³ B23K *11/16*
U.S. Cl. 219—56.1 **18 Claims**



1. A welder for use with a conductive workpiece, comprising:

a housing having a support;

a first electrode having a first tip;

first means for mounting the first electrode to the housing for linear motion relative to said support along a first axis;

a second electrode having a second tip;

second means for mounting the second electrode to the housing for linear motion relative to said support along a second axis different from said first axis;

third means mounted to the housing for controllably introducing insulated wire around at least a portion of said first tip;

fourth means for driving said first electrode along said first axis to a first position on one side of the workpiece where the insulated wire around a portion of said first tip contacts the workpiece and for driving said second electrode along said second axis to a second position on the

same side of the workpiece where said second tip mechanically and electrically contacts said workpiece; and

fifth means mounted to said housing and operative in response to said first and second electrodes being in said first and said second positions for applying electrical current to said first and second electrode tips for welding said wire to said workpiece.

4,465,914

WIRE-CUT, ELECTRIC DISCHARGE MACHINING METHOD FOR AUTOMATICALLY MEASURING A REQUIRED OFFSET VALUE

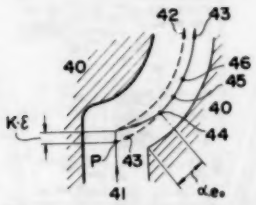
Haruki Obara, Sagamihara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,844

Claims priority, application Japan, Apr. 16, 1980, 55-49941

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **1 Claim**



1. A wire-cut, electric discharge machining method for machining a workpiece from a first position on the workpiece to a second position on the workpiece into a desired shape having a curve, comprising the steps of:

(a) stopping the feed and de-energizing a wire electrode;

(b) moving the wire electrode in a direction perpendicular to a machining path until it contacts the wall of a workpiece at the first position;

(c) detecting the size of a spark gap at a third position of contact of the wire electrode with the workpiece between the first position and the second position;

(d) determining an offset value from the detected size of the spark gap and the dimensions of the wire electrode while the wire is de-energized;

(e) correcting the path so that the center of the wire electrode lies at a position offset by the offset value; and

(f) repeating steps (c), (d) and (e) in order, a plurality of times between the third position and the second position,

wherein each of the steps (a)–(f) occurs during machining of the workpiece into the desired shape.

4,465,915

METHOD AND APPARATUS FOR THREADING AN ELECTRODE WIRE THROUGH AN APERTURE IN A WORKPIECE

Francois Corcelle, Pouilly, France, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

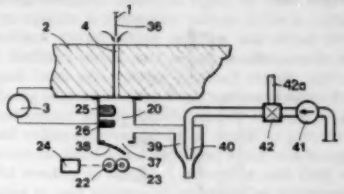
Filed Nov. 6, 1981, Ser. No. 318,689

Claims priority, application Switzerland, Jul. 15, 1980, 5406/80

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **5 Claims**

1. A method for threading an end of an electrode wire through a starter aperture in a workpiece mounted on an EDM apparatus, said workpiece being inmersed in machining fluid, wherein said machining fluid is normally caused to flow through said aperture in the workpiece from an inlet to an outlet in the same direction as the direction of passage of said wire through said aperture in the workpiece, said method comprising disposing a chamber in jointed engagement with said workpiece, said chamber having an opening surrounding the outlet of said aperture in the workpiece, connecting a source of suction to said chamber for causing said fluid to flow through said aperture in the workpiece by exerting suction at said outlet of said aperture such as to create a flow of fluid converging towards the inlet of said aperture, simultaneously bringing the end of said electrode wire proximate said inlet of



said aperture in the workpiece, whereby the end of said electrode wire is substantially centered relative to said inlet of said aperture in the workpiece by a converging flow of said fluid toward said inlet of said aperture in the workpiece, and feeding said electrode wire through said aperture in the workpiece.

4,465,916

METHOD FOR MANUFACTURING A PLASMA IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

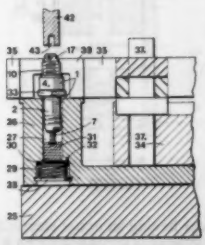
Jean-Francois Tromeur, Pully, Switzerland, assignor to Espada Anstalt, Universal Marketing, Vaduz, Liechtenstein

Filed May 24, 1982, Ser. No. 381,038

Claims priority, application Switzerland, Jun. 3, 1981, 3635/81

Int. Cl.³ B23K *11/00*

U.S. Cl. 219—78.01 **4 Claims**



1. Method for manufacturing a plasma ignition device for an internal combustion engine, said ignition device having a first end having a threaded connector, an opposite end including a cap with a threaded portion having an extremity, and a central electrode with an active tip, a pre-combustion chamber formed by a capsule fixed on the extremity of the cap and forming a ground electrode co-operating with the active tip of the central electrode, characterized in that in order to fix the capsule (17) to the cap (4), there is engaged in gripping mating threaded relation the threaded portion (10) of the cap into a threaded part (38–39) forming support for the cap (4) during that operation, and in that there is exerted on the capsule (17), at the same time that welding current is supplied to the capsule, a force on the cap tending to move said device in the direction of said first end sufficient to produce a good welding of the capsule (17) to the cap (4), so that only the capsule and the threaded portion of the cap are subjected to a mechanical stress due to that force, said force being resisted by the gripping mating threaded engagement of said threaded portion in said threaded part.

4,465,917

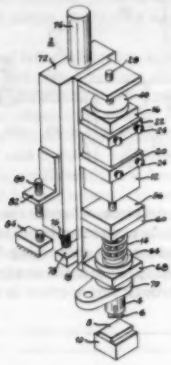
STUD WELDER WITH MAGNETIC FOLLOW-UP

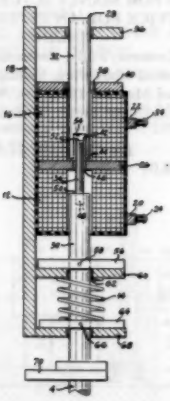
Erich E. Heider, West Allis, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 28, 1982, Ser. No. 393,154

Int. Cl.³ B23K 9/20

U.S. Cl. 219—98 **12 Claims**





1. In a stud welder having an upper electrode holding a part which is lowered to engage another part on a lower electrode and then lifted by an energized magnetic coil to start an arc between the parts, followed by spring biased driving force pushing the upper electrode downwardly such that the parts reengage and weld together, the improvement comprising a second magnetic booster coil energized to supply additional and faster follow-up force driving said upper electrode downwardly after said arc-starting lift.

4,465,918

METHOD FOR CONTROLLING WELDING CURRENT

Satoru Kiriyama, and Mikiji Suzuki, both of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 454,098

Int. Cl.³ B23K 11/24

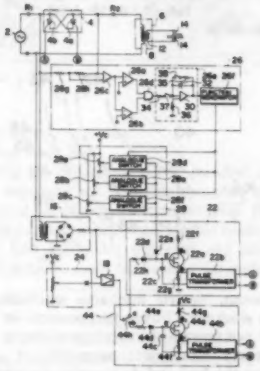
U.S. Cl. 219—110 **10 Claims**

1. In a resistance welder having an A.C. power supply, a switching element for phase-controlling a voltage from said A.C. power supply to supply a welding current to a welding transformer and a phase-shift pulse generator for supplying a pulse to said switching element to control a firing angle so that said voltage is phase-controlled; a method for controlling the welding current to a target value comprising test current supply steps carried out in a first cycle of an A.C. supply and weld current supply steps carried out after said test current supply steps have been carried out, said test current supply steps including:

(a) causing said switching element to conduct through a predetermined firing angle during the first cycle of the A.C. supply;

(b) detecting a conduction angle of said switching element during the first cycle of the A.C. power supply;

(c) calculating a power-factor angle on the basis of the conduction angle detected in said step (b) and a predetermined relationship between the conduction angle and the power-factor angle; and



(d) selecting a curve corresponding to the measured power-factor angle from a plurality of predetermined curves representing relations between the welding currents and control voltages to said phase-shift pulse generator for a plurality of power-factor angles of the load; and said weld current supply steps including:

(e) measuring a variation of the voltage of said A.C. power supply; and

(f) controlling a period of the pulse from said phase-shift pulse generator based on a value determined in accordance with the selected curve and the measured variation of the voltage and supplying the pulse to said switching element.

4,465,919

CUTTING APPARATUS FOR THREE-DIMENSIONAL MOULDINGS

Walter Röder, Vilbeler Landstrasse 41, 6000 Frankfurt, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,340

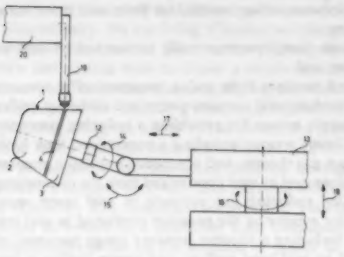
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011244

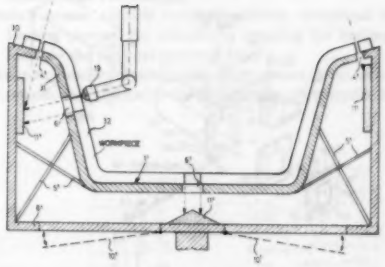
Int. Cl.³ B23K 9/00

U.S. Cl. 219—121 LG **12 Claims**

1. A laser beam cutting apparatus for cutting three-dimensional work pieces, comprising hollow exchangeable backing molding means shaped to correspond to the shape of a three-dimensional work piece for holding the work piece in a form locking manner, at least one opening forming an uninterrupted slot or aperture extending three-dimensionally in said backing molding means, laser beam generating means including a laser beam head located to face a work piece held by the backing molding means, movement providing means operatively arranged for providing a relative three-dimensionally effective movement between said laser beam head and said backing molding means, and laser beam shielding means located sub-

stantially in alignment with said opening with regard to the direction of a laser beam, said shielding means being spaced





from said opening in said backing molding means opposite said laser beam head.

4,465,920

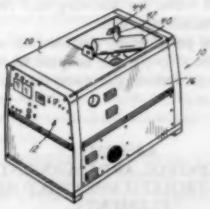
ELECTRIC WELDER WITH CURRENT-VOLTAGE FEEDBACK CIRCUIT THAT PROVIDES DESIRED SLOPE CURVE

Harold C. Hoyt, Jr., St. Louis, Mo., and William J. Greene, Warren, N.J., assignors to Teledyne-Walterboro, a Division of Teledyne Industries, Inc., Calif.

Division of Ser. No. 944,962, Sep. 22, 1978, Pat. No. 4,293,756. This application Apr. 20, 1981, Ser. No. 255,354

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—133 **10 Claims**



1. An electric welder which comprises a D.C. generator, a command circuit that can develop a variable value command signal, a current feedback circuit, a voltage feedback circuit, a control circuit which receives said command signal from said command circuit and that can simultaneously respond to a signal from said current feedback circuit to provide a current-modified command signal which will be applied to the field winding of said D.C. generator, said field winding responding to said current-modified command signal to cause said electric welder to operate in a constant current mode, said control circuit being adapted to receive said command signal from said command circuit and to simultaneously respond to a signal from said voltage feedback circuit to provide a voltage-modified command signal which will be applied to said field winding of said D.C. generator, said field winding responding to said voltage-modified command signal to cause said electric welder to operate in a constant voltage mode, a voltage-current feedback circuit which receives said signal from said current feedback circuit and which simultaneously receives said signal from said voltage feedback circuit, said control circuit being adapted to receive said command signal from said command circuit and to simultaneously respond to a signal from said voltage-current feedback circuit to provide a voltage-current-modified command signal which will be applied to said field winding to said D.C. generator, said field winding responding to said voltage-current-modified command signal to cause said electric welder to operate in a slope mode, and mode-selecting means that selectively connects said current feedback circuit or said voltage feedback circuit or said voltage-current feedback circuit to said control circuit.

4,465,921

FLUX-CORED WIRE FOR GAS-SHIELDED ARC WELDING

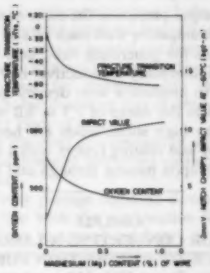
Yoshiya Sakai; Yasuhiro Nagai, both of Fujisawa; Kazuo Ikemoto, Kamakura; Takakiyo Aoki, Yokohama, and Hidehiko Kanehira, Kamakura, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jun. 3, 1982, Ser. No. 384,627

Claims priority, application Japan, Jun. 5, 1981, 56-87366

Int. Cl.³ B23K *35/362*

U.S. Cl. 219—146.24 **10 Claims**



1. A flux-cored welding electrode for gas-shielded arc welding comprising a mild steel sheath and a flux core, said flux core comprising, based on the total weight of the electrode:
TiO_2—4 to 8.5%
Mg—0.2 to 0.8%
Ti—0.03 to 0.7%
B—0.002 to 0.025%
Mn—1.0 to 3.0%
Si—0.1 to 1.2%
Metal Fluorides—0.01 to 0.30% as F-content
Oxides—not more than 8.5%, including TiO_2.

4,465,922

ELECTRIC HEATER FOR HEATING HIGH SOLIDS FLUID COATING MATERIALS

James A. Kolibas, Broadview Hts., Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Aug. 20, 1982, Ser. No. 410,009

Int. Cl.³ H05B *1/02;* **F24H** *1/12;* **B05B** *1/24, 7/16*

U.S. Cl. 219—304 **10 Claims**

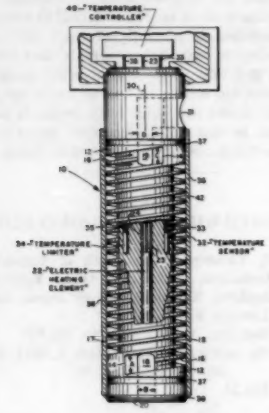
1. A heater for high solids fluids having a solids content of

approximately 50 percent or greater by weight or volume, which fluids are applied to a substrate by a coating system, comprising:

a. a body made of thermally conductive material;

b. a channel formed on the outer periphery of said body including section means for defining a pair of side-by-side passages, each of said passages having an identical cross-sectional area of about 0.119 square inches and a length of about 80 inches;

c. a common input plenum at one end of said channel in fluid communication with each of said passages;



d. a common output plenum at the other end of said channel in fluid communication with each of said passages; and

e. heating means for generating heat, positioned to supply heat to said thermally conductive body, said heating means sized to produce a watt density on the surface of said passages in the range of 7.5 to 8.0 watts per square inch, whereby high solids fluids are heated for ease in application by said coating system with a minimum loss of fluid pressure upon passing through said heater.

4,465,923

APPARATUS FOR CONVERTING A LABORATORY AIR FURNACE TO A REDUCTION FURNACE

Mark A. De Wilde, Forest Hill, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 24, 1983, Ser. No. 460,104

Int. Cl.[3] F27B *5/00*; B01J *3/04*

U.S. Cl. 219—390 **4 Claims**

1. A reducing furnace comprising a laboratory air furnace having a heating chamber therein;

(i) rectangularly shaped, welded stainless steel, vacuum tight, container having an open end with a vent orifice disposed in a top wall thereof and a supply orifice disposed in a bottom wall;

(ii) a water cooled flange operatively disposed on said open end, said flange having a plurality of threaded bolt holes therein for bolts placed therethrough;

(iii) cover means removeably attached to said flange for allowing access to said muffle and for providing a vacuum tight cover therefor, which includes;

(iv) gasket means disposed intermediate said cover means and said flange for providing a compliant vacuum tight seal means between the front of said flange and the rear surface of said cover; a water cooled pipe fixedly attached to the front face of said cover means; and a fire brick fixedly attached to the rear side of said cover means for slidably entering the open end of said stainless steel container to retain heat therein;

(v) pumping means pneumatically connected to said insert means for evacuating residual air from said insert means, including

a vacuum pump pneumatically connected to said vent orifice; and

a second vacuum tight valve pneumatically connected intermediate said vacuum pump and said vent orifice;

(vi) gas supply means for providing a reducing atmosphere to said insert means; including a pressurized tank having hydrogen gas therein; and a pressure regulator pneumatically connected to said pressurized tank for maintaining a controlled reducing gas pressure in said insert means, means for measuring the pressure contained in said insert means, including a vacuum pressure gauge pneumatically coupled to said vent orifice, said gauge having a range which varies from at least 1 mm Hg to 770 mm Hg pressure;

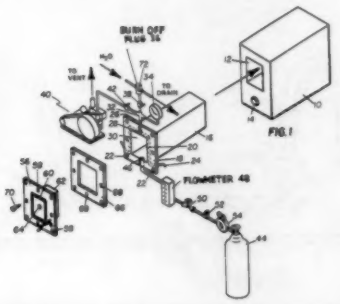


FIG. 1

(vii) means for controlling the flow of said reducing gas; including

a flow meter pneumatically connected to said supply orifice of said insert means;

a metering valve pneumatically connected to the input side of said flow meter; and

a third cutoff valve pneumatically connected intermediate said metering valve and said pressure regulator; and

(viii) means for harmlessly burning off the excess reducing gas vented from said vent orifice of said insert means, including

a first vacuum tight shut-off valve pneumatically coupled to said vent orifice;

a porous metal burn plug pneumatically connected to said first shut off valve for allowing said reducing gas to burn away harmlessly; and

(ix) a cooling coil peripherally disposed on said burn plug, whereby elements (i)–(ix) are adapted to be easily disassembled from said reducing furnace, for use of the furnace as an air furnace.

4,465,924

PROTECTIVE CONTROL ARRANGEMENT FOR DUTY CYCLE CONTROLLED SHEATHED HEATING ELEMENTS

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 7, 1982, Ser. No. 337,878

Int. Cl.[3] H05B *1/02*

U.S. Cl. 219—492 **13 Claims**

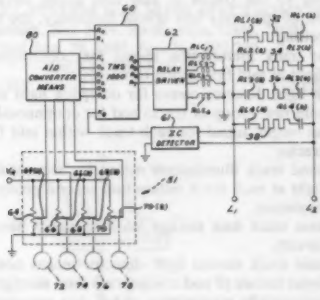
1. A protective control arrangement for a heating unit of the type comprising the concentric assembly of a resistive heating element embedded in an insulating material and enclosed within a metallic sheath, the insulating material in its normal state being characterized by a very high resistance and in its combined molten and plasma state being characterized by a

relatively low resistance, the resistive element being adapted for energization by an external power supply, the heating unit being susceptible to a discontinuity developing in the resistive element when energized which can result in an electrical arc at the discontinuity, the arc being effective to reduce the insulating material proximate to the arc to its relatively low resistance molten and plasma state to create a relatively low resistance current path from the discontinuity to the sheath and ultimately rupture the sheath; the arc and rupture if unchecked propagating along the length of the sheath, the period of propagation being the time between initiation and termination of such propagation, the insulating material having associated therewith a nominal recovery time required to allow the resultant relatively low resistance molten and plasma insulating material to return to a relatively high resistance state upon extinguishing the arc by interruption of power to the heating element, said protective control arrangement comprising:

power level selection means for enabling the user to select a power setting for the heating unit from a plurality of available power settings;

switch means adapted to be operatively connected to the heating element for selectively coupling the heating element to the external power supply;

control means responsive to said power level selecting means and operative to control the duty cycle of the



heating element for at least one of said power settings by periodically opening said switch means to decouple the heating element from the power supply for idle periods of predetermined duration, the duration of said idle periods and the period between said idle periods depending upon the power level selected by the user; and

timing means operative to monitor the time between decouplings, which time depends upon the power level selected by the user; said timing means being reset by said control means in response to the occurrence of each power control decoupling;

said control means being responsive to said timing means and further operative to interrupt power to the heating element for a recovery period of predetermined duration whenever the time between decouplings exceeds a predetermined maximum time, said predetermined maximum time being selected to confine the duration of the period of propagation within predetermined limits, said recover period being at least equal to the nominal recovery time; whereby the propagation of a relatively low resistance current path from the heating element to the metallic sheath through the insulating material along a substantial portion of the length of the heating unit resulting from the occurrence of a discontinuity in the heating element is prevented.

4,465,925

AUTOMATIC MONEY DEPOSITING AND DISBURSING MACHINE

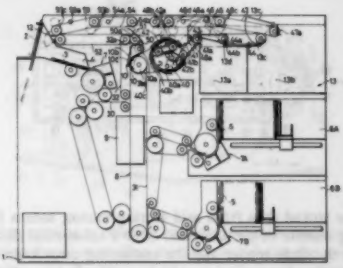
Kowichi Goi, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,035

Claims priority, application Japan, May 9, 1981, 56-69811; May 22, 1981, 56-77548; Jun. 25, 1981, 56-98785

Int. Cl.³ G07D *7/00*

U.S. Cl. 235—379 **4 Claims**



1. An automatic money depositing and disbursing machine wherein deposited notes are stored and notes to be paid out are disbursed, said machine comprising:

a dealing port;

a receiving section in communication with the dealing port for receiving deposited notes;

at least one payment box for storing notes to be paid out;

a common delivery passage disposed downstream of and in communication with the receiving section and downstream of and in communication with the payment box for delivering deposited notes fed from the receiving section and delivering notes to be paid out from the payment box;

a discriminating section disposed adjacent the common delivery passage for discriminating the notes passing therethrough and detecting forged notes, double feeding, and different kinds of notes;

a pool section disposed downstream of and in communication with the common delivering passage for temporarily storing notes;

a second delivery passage disposed downstream of and in communication with the pool section for delivering the notes therefrom to a receiving box;

a disbursing section for delivering the notes to the dealing port;

a third delivery passage disposed downstream of and in communication with the common delivery passage for delivering notes therefrom to the disbursing section; and

switching means disposed downstream of the common delivery passage for switching the notes from the common delivery passage into either one of the pool section and the third delivery passage.

4,465,926

OPTICAL READING DEVICE FOR THE MANUAL OPTICAL SCANNING AND FOR EVALUATING OPTICALLY READABLE CHARACTER CODES

Siegfried Apitz, Pforzheim, and Rolf Noonenmann, Karlsbad, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 5, 1982, Ser. No. 355,016

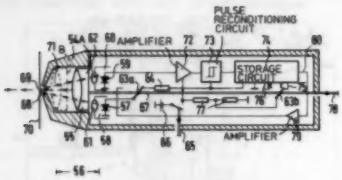
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109286

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—472 **9 Claims**

1. Optical reading device for manually scanning and for evaluating optically readable character codes, in particular a bar code, with the aid of a handheld code reader which, inside

a scanning head and behind a light-exiting aperture, contains a lens system, a photo-transmitter and a photo-receiver for the scanning operation, which converts the light as entering through the light-exiting aperture, into electric scanning signals, and comprising an evaluating circuit which is in connection with the code reader, and which forms control and indicating signals from the signals as received by the code reader, comprising, in the code reader, means for storing the data received from said photo-receiver; means for serially retrieving the stored data from said storing means; means for establishing remote communication over a substantial distance between the code reader and the evaluating circuit via radiation propagating through the ambient atmosphere, and switching means selectively operative for establishing connections between the photo-receiver and the storing means during a scanning operation, and between the storing and retrieving means and said establishing means during a transmitting operation; and, in the evaluating circuit, means for receiving the radiation remotely transmitted by said establishing means.



4,465,927

PHOTOSENSITIVE TUBE WITH LIGHT BIAS

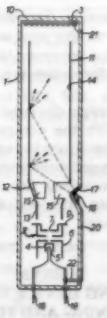
Hans Scholz, Maldon, and Paul C. Bailey, Chelmsford, both of England, assignors to English Electric Valve Company Limited, Essex, England

Filed Feb. 8, 1982, Ser. No. 347,044

Claims priority, application United Kingdom, Feb. 12, 1981, 8104346

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **12 Claims**



1. A photosensitive pick-up tube comprising

an evacuated tubular envelope having a photoconductive target at one end thereof and at least one reduced cross-sectional portion along the length thereof;

an electron gun assembly within said envelope for projecting an electron beam towards said target;

a tubular anode electrode within said envelope between said target and said gun assembly, said electrode having a reduced portion in the region of said reduced cross-sectional portion of said envelope; and

a plurality of light emissive devices positioned outside said envelope and within said reduced cross-sectional portion of said envelope to direct light into said envelope for illuminating said target.

4,465,928

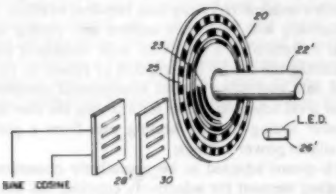
OPTICALLY MULTIPLEXED ENCODER SYSTEM

Donald H. Breslow, Framingham, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Aug. 17, 1981, Ser. No. 293,254

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **2 Claims**



1. In a digital encoder having an encoding member bearing a first group of tracks, at least one track having light transmissive coded segments therein of relatively high spacial frequency and a second group of coarser binary code tracks relative to the tracks in said first group having segments therein of relatively low spatial frequency, the improvement comprising:

first track illumination means for continuously directing light at said first group of tracks;

first light detector means for detecting light modulated by said first group of tracks and for continuously producing an output signal for each track within said first group of tracks;

second track illumination means for sequentially directing light at each track within said second group of tracks in sequence;

coarse track data storage latching means having an input circuit;

coarse track second light detector means coupled to said input circuit of said coarse track data storage latching for sequentially transmitting coded data associated with said second group of tracks to said data storage latching means; and

means for reading said coded data stored within said data storage latching means along with said output signals produced by said first light detector means to establish the position of said encoding member relative to said first and second light detector means.

4,465,929

CALIBRATION STANDARD FOR INFRARED ABSORPTION GAUGE

Roger F. Edgar, Maldon, England, assignor to Infrared Engineering Limited, Essex, England

Filed Aug. 27, 1982, Ser. No. 413,151

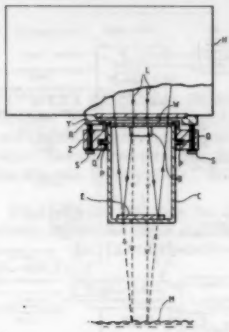
Claims priority, application United Kingdom, Jun. 18, 1982, 8217789

Int. Cl.³ G01D *18/00*

U.S. Cl. 250—252.1 **33 Claims**

1. A calibration standard for an infrared absorption gauge, said gauge having a source of infrared radiation, an exit to enable said radiation to reach a sample zone and an entrance to transmit the radiation reflected from the sample zone whereby the amount of sorbed substance on a sample, located in the sample zone, can be measured, the calibration standard comprising an assembly which includes spectrally selective absorption means to receive infrared radiation from said exit when said calibration standard co-operates with said absorption gauge, said spectrally selective absorption means having an

infrared absorption spectrum resembling that of the substance to be measured, and optical means to return infrared radiation, which has passed through said spectrally selective absorption



means, to said entrance substantially along the same path as that followed by infrared radiation from the sample zone to said entrance in the absence of the calibration standard.

4,465,930

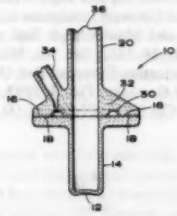
GLASS INLET SYSTEM FOR MASS SPECTROMETER

Robert J. Brunfeldt, Box 3636, Bartlesville, Okla. 74003

Filed Jun. 28, 1982, Ser. No. 392,729

Int. Cl.³ H01J *49/04*

U.S. Cl. 250—288 **3 Claims**



1. In a glass inlet system wherein the sample container involves a glass joint consisting of a pair of mated polished glass flats that separate to accept a sample and are held together under vacuum during sample injection, the specific improvement comprising; at least one groove in one of said polished glass flats that encircles said sample container at the interface between said flats and wherein said groove is substantially surrounded by a continuous matrix of glass such that both sides of said groove are exposed to the same temperature change essentially as a single unit and wherein said groove is connected to a vacuum source during the use of the inlet system thus creating a sample vacuum lock.

4,465,931

THERMAL DUPLICATING APPARATUS

Toshimi Ohkubo, Kawanishi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 3, 1982, Ser. No. 446,677

Claims priority, application Japan, Dec. 3, 1981, 56-195432

Int. Cl.³ G03C *5/16*

U.S. Cl. 250—317.1 **12 Claims**

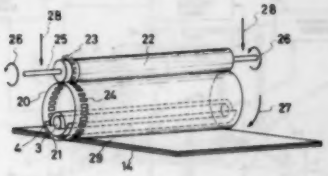
1. A thermal duplicating apparatus for forming a duplicate of an original by selective application of heat comprising:

a flexible cylinder having a predetermined inner diameter and thickness;

support means for supporting said flexible cylinder rotatably;

a light source supported by said support means to be disposed inside of said flexible cylinder, said light source emitting a light ray to which said flexible cylinder is substantially transparent

pressing means for pressing said flexible cylinder against the surface of a heat sensitive recording medium overlying the original held substantially in a flat state whereby said flexible cylinder is slightly deformed; and



means for causing a relative motion between said support means and said recording medium overlying the original whereby said flexible cylinder in effect rolls along the surface of said recording medium to bring said recording medium progressively in close contact with the original from one end to the opposite end so that said recording medium receives heat in accordance with the image pattern of said original to form a duplicate image thereon.

4,465,932

METHOD AND APPARATUS FOR THE DETECTION OF IONIZING RADIATION

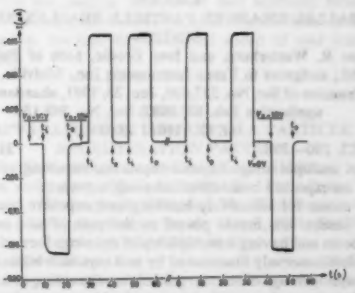
Eduard A. Burgemeister, Abcoude, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed Sep. 14, 1981, Ser. No. 302,297

Claims priority, application Netherlands, Nov. 19, 1980, 8006321

Int. Cl.³ G01T *1/22*

U.S. Cl. 250—370 **15 Claims**

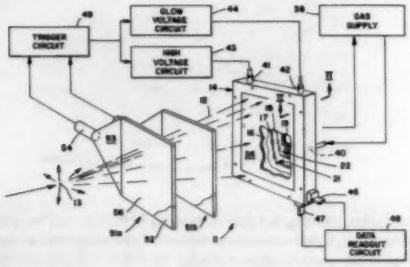


1. A method for the detection of ionizing radiation by the use of a diamond as the radiosensitive element including the steps of applying an electrical bias across the diamond having low (2×10^{-3} at.% or less) nitrogen concentration and low (10^{-4} or less) birefringence, and exposing the diamond to ionizing radiation generating thereby free carriers with a lifetime of 10^{-6} s or longer.

4,465,933
WIRE CHAMBER RADIATION DETECTOR WITH DISCHARGE CONTROL

Victor Perez-Mendez, and Terrence A. Mulera, both of Berkeley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 29, 1982, Ser. No. 363,201
Int. Cl.³ H01J *47/18*
U.S. Cl. 250—385 **14 Claims**



1. In a wire chamber for detecting charged particles or other ionizing radiations, having first, second and third spaced apart electrodes, said first and second electrodes defining an ignition region wherein said charged particles initiate localized primary electrical discharges, said second and third electrodes defining a memory region wherein localized glow discharges are initiated by said primary discharges, and having means for detecting the spatial locations of said glow discharges within said memory region, and high voltage supply means for applying a high voltage pulse across said first and second electrodes, the improvement comprising:

discharge limiting means for restricting said primary discharges to the avalanche stage of electrical discharge progression,

said discharge limiting means including a fourth electrode situated between said first and second electrodes in spaced apart relationship to each thereof, and

means for applying a discharge control voltage pulse to said fourth electrode concurrently with application of said high voltage pulse across said first and second electrodes.

4,465,934
PARALLEL CHARGED PARTICLE BEAM EXPOSURE SYSTEM

Eugene R. Westerberg, and Ivor Brodie, both of Palo Alto, Calif., assignors to Veeco Instruments Inc., Melville, N.Y.

Continuation of Ser. No. 227,620, Jan. 23, 1981, abandoned. This application Feb. 11, 1982, Ser. No. 348,154
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—398 **31 Claims**

1. A multiple image exposure system comprising:

(a) an exposure beam directed along a path;

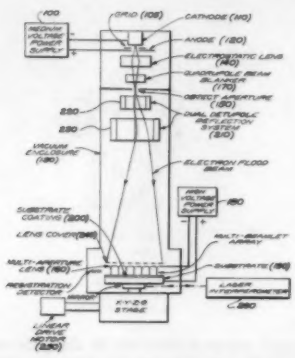
(b) means for selectively blanking said exposure beam;

(c) screen lens means placed in the path of said exposure beam and having a multiplicity of openings formed therein simultaneously illuminated by said exposure beam, each of said openings of said screen lens means acting as a lens for focusing a demagnified image of said exposure beam onto a target surface positioned adjacent said screen lens means;

(d) deflection means comprising a plurality of octupole deflectors sequentially disposed along the path of said exposure beam between said blanking means and said screen lens means for controllably deflecting said exposure beam in a predetermined manner and thereby controlling the deflection of the multiplicity of demagnified images of said exposure beam being focused onto said target surface; and

(e) means for applying predetermined voltages to said octupole deflectors to tailor the shape of said octupole deflectors' electric fields so that the deflection trajectories of particles comprising said exposure beam reaching said screen lens means are uniform;

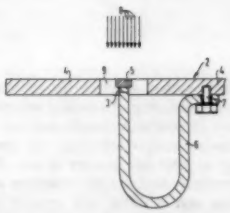
(f) means for moving said target surface.



4,465,935
ELECTRICALLY CONDUCTIVE SAMPLE SUPPORT-MOUNTING FOR SECONDARY ION MASS SPECTROMETER ANALYSIS

Rolf von Criegern, Geretsried, and Ingo Weitzel, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 24, 1982, Ser. No. 381,044
Claims priority, application European Pat. Off., Jul. 21, 1981, 3128814; Fed. Rep. of Germany, Feb. 4, 1982, 82100811
Int. Cl.³ G01N *21/00, 23/00*
U.S. Cl. 250—440.1 **11 Claims**



1. A secondary ion mass spectrometry analysis sample support mounting system for depth profiling wherein a mounted sample is analyzed through bombardment with an ion or neutral particle beam in a vacuum, the sample being eroded at an impinging location and secondary ions resulting during the erosion being created which are analyzed in a mass spectrometer, comprising: an electrically conductive sample plate dimensioned and shaped to accommodate the sample; a sample supporting surface of the sample plate facing the ion or neutral particle beam being smaller than a supporting surface of the sample and designed such that the sample is arranged in an environment-free fashion centrally of and completely in an interior of a region impinged upon or scanned by the ion or neutral particle beam, the region impinged upon or scanned being larger than a surface of the sample facing the beam; and said impinged upon region surrounding the sample through which the beam passes so that an entire surface of the sample

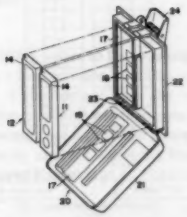
facing the beam lies completely within the region so that no crater rim is present which would trigger undesired signals during depth profile analysis.

4,465,936

COMPLEX PERSONAL DOSIMETER

Hideharu Ishiguro; Shinso Takeda; Yukihiro Nomura, all of Ibaraki, and Yoshitake Yasuno, Kyoto, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed May 25, 1982, Ser. No. 381,908
Claims priority, application Japan, Jun. 11, 1981, 56-85747[U]
Int. Cl.³ G01T *1/11*
U.S. Cl. 250—484.1 11 Claims



1. A complex personal dosimeter including a gamma- and beta-ray dosimeter block and a neutron dosimeter block, these two blocks being enclosed in a package of a badge case type, said gamma- and beta-ray dosimeter block consisting of:

a first dosimeter unit for measuring the dose of beta-rays comprising a first thermoluminescent element sensitive to gamma- and beta-rays, with a first filter for partially screening beta-rays disposed on the front side of said first element;

a second dosimeter unit for measuring beta-ray energy comprising a second thermoluminescent element sensitive to gamma- and beta-rays, with a second filter disposed on the front side of said second element, said second filter being thicker than said first filter;

a third dosimeter unit for measuring the dose of gamma-rays comprising a third thermoluminescent element sensitive to gamma-rays and having an energy response suitable for determining the depth dose equivalent index; and

a fourth dosimeter unit for measuring gamma-ray energy comprising a fourth thermoluminescent element sensitive to gamma-rays;

said neutron dosimeter block consisting of:

a fifth dosimeter unit for compensating a gamma-ray contribution in the determination of the neutron dose, said fifth unit comprising a fifth thermoluminescent element sensitive to gamma-rays with filters of cadmium disposed on both front and rear sides of said fifth element;

a sixth dosimeter unit comprising a sixth thermoluminescent element sensitive to neutrons and gamma-rays with a filter of tin and a filter of cadmium disposed on the front and rear sides, respectively, of said sixth element;

a seventh dosimeter unit comprising a seventh thermoluminescent element sensitive to neutrons and gamma-rays with filters of cadmium disposed on both front and rear sides of said seventh element; and

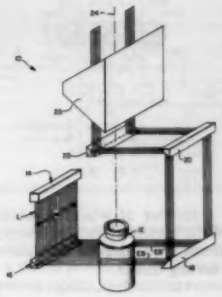
a eighth dosimeter unit having the same construction as that of said sixth dosimeter unit but in the opposite arrangement of said tin and cadmium filters.

4,465,937

APPARATUS FOR OPTICALLY SCANNING AN OBJECT

James A. Forbes, P.O. Box 854, Doylestown, Pa. 18901

Filed Oct. 22, 1981, Ser. No. 313,794
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—560 12 Claims



1. An apparatus for optically scanning at least the peripheral surface of an object comprising:

light generating means for generating light energy for optically scanning the object;

a hollow scanning head mounted for rotation about a system axis;

support means for supporting an object to be scanned within said scanning head;

optical means mounted in said scanning head for directing the light energy toward the object to be scanned including towards at least one edge of the object to be scanned so that the object will occlude a portion of the light, and for directing the object occluded light along the axis;

transfer head means, including a transfer head, mounted for rotation about said axis and having a Dove prism supported therein along said axis for receiving the object occluded light directed from said optical means and for directing said object occluded light along said axis;

light receiving means positioned to receive the light directed from said Dove prism, said light receiving means including a multiplicity of light-responsive elements, each element providing an electrical output representative of the light falling thereon; and

drive means coupled to said scanning head and transfer head means for causing rotation of said scanning head and transfer head about the axis, said transfer head being rotated at one-half the rotational speed of said scanning head.

4,465,938

APPARATUS FOR DETECTING A PARTICLE AGGLUTINATION PATTERN

Masahiko Kato, Akigawa, and Tokio Kano, Akishima, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Apr. 29, 1982, Ser. No. 373,100
Claims priority, application Japan, May 7, 1981, 56-67583
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—576 24 Claims

1. An apparatus for detecting photoelectrically a particle agglutination pattern formed on a bottom surface of a reaction vessel, at least a part of the bottom surface being inclined with respect to the horizontal plane, comprising

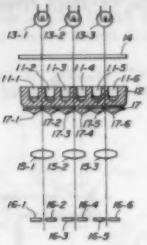
means for illuminating the particle agglutination pattern formed on the bottom surface of the reaction vessel;

means for forming an image of the particle agglutination pattern formed on the bottom surface;

means for converting the image of the particle agglutination

pattern into an electrical signal representing the particle agglutination pattern; and

means arranged underneath the reaction vessel and having a



projection a contour of which is substantially identical with that of the bottom surface to correct a non-uniformity in brightness of an image of the bottom surface formed on the converting means.

4,465,939

IMAGE READING APPARATUS HAVING A PLURALITY OF IMAGE SENSORS

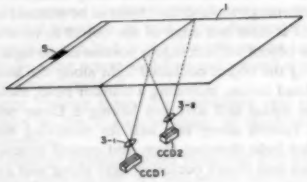
Yasuyuki Tamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

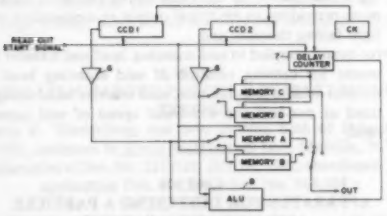
Filed Aug. 18, 1981, Ser. No. 293,880

Claims priority, application Japan, Aug. 25, 1980, 55-116845

Int. Cl.³ G06K *9/34*; H04N *1/10*

U.S. Cl. 250—578 **6 Claims**





1. An image reading apparatus, comprising:

plural one-dimensional image sensors for reading an original;

plural memory means respectively corresponding to said image sensors, wherein each of said plural memory means has a pair of memory units for storing image information from the associated one of said image sensors;

driving means for driving each of said plural memory means such that one of said pair of memory units stores image information read in from the associated image sensor, while stored image information is read out from the other of said pair of memory units;

detector means for detecting the size of an area of the original overlappingly read by a pair of adjacent image sensors; and

control means for controlling a start timing of image information read-in in said plural memory means such that the read-in start time of the memory means associated with one of said adjacent pair of image sensors is delayed compared to the read-in start time of the memory means associated with the other of said adjacent pair of image sensors in accordance with a detection signal from said detector means.

4,465,940

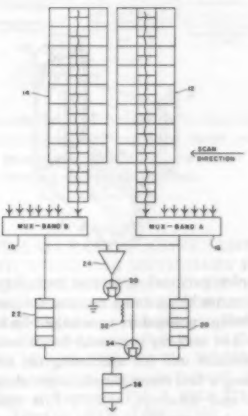
ELECTRO-OPTICAL TARGET DETECTION

Herman Graff, Beverly Hills, Calif., and James D. Joseph, Oakdale, Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 15, 1982, Ser. No. 368,787

Int. Cl.³ H01J *40/14*; G01J *1/00*; F41G *7/00*

U.S. Cl. 250—578 **4 Claims**



1. An apparatus for spatial target detection comprising:

a plurality of sensors, said plurality of sensors being divided into at least two groups; each group having a multiplexing means for combining signals from said sensors, and a separate memory means for storing data representing the signals from its multiplexer means;

data selection means operative to select a combination of data from the separate memory means of the different groups if a ratio of the data from the multiplexing means of the different groups is less than a predetermined threshold, said data selection means being alternatively operative to select data from only one memory means if a ratio of the data from the multiplexing means is greater than the threshold.

4,465,941

WATER ENGINE

Eric M. Wilson, Stockport, and Geoffrey N. Bullock, Parbold, both of England, assignors to Aur Hydropower Limited, London, England

Filed Mar. 19, 1982, Ser. No. 359,759

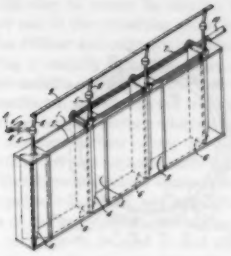
Claims priority, application United Kingdom, Mar. 26, 1981, 8109477

Int. Cl.³ F03B *13/12, 9/00*

U.S. Cl. 290—54 **13 Claims**

12. A water engine for extracting energy from a head of water, including a barrage having a differential head of water on an upstream and downstream side, the engine comprising a working chamber, a water-driven double-acting piston member arranged for horizontal reciprocal movement in the work-

ing chamber and means for admitting water from the upstream side of the barrage into the working chamber to two working faces of the piston member in turn, and for allowing water to flow to the downstream side of the barrage from the part of the working chamber on the side of the water-driven member opposite that on which water is being admitted, to cause the water-driven member to reciprocate in the working chamber,



said means for admitting water to the working chamber including a valve having a first position enabling water to pass from the upstream side of the barrage into the working chamber, and a second position, enabling water to pass from the working chamber to the downstream side of the barrage, and means for allowing the engine to operate when the head drop occurs in either direction across the barrage.

4,465,942

ELECTRICAL INSTALLATION FOR TRIGGERING SWITCHING FUNCTIONS IN MOTOR VEHICLES

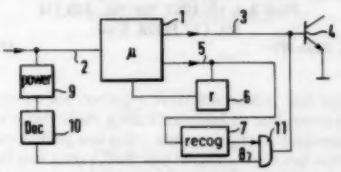
Axel Deicke, Baldham, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,921

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1981, 3139067

Int. Cl.³ H02J *1/00*; H02G *3/00*; B61G *1/08*

U.S. Cl. 307—9 **18 Claims**



5. An electrical installation for triggering switching functions in motor vehicles including first means forming a central unit which produces from input signals coordinated output signals for switching load switch means, and second means forming a redundancy unit, operatively connected with said central unit, wherein groups of mutually similar switching functions are formed, and for each group an output signal for the switching function which has the highest priority in a corresponding group, is operable to be fed to the load switch means by the second means forming the redundancy unit,

the output signal of the redundancy unit being operable to be applied to the corresponding load switch means in the presence of any input signal of the respective group, and the output signal of the redundancy unit is released only in case of improper operation of the central unit.

4,465,943

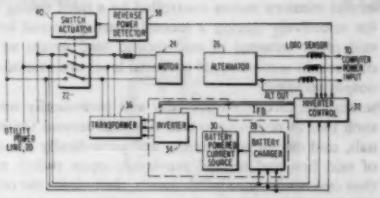
UNINTERRUPTED POWER SYSTEM WITH FREQUENCY AND PHASE CONTROL

Robert L. Risberg, 1810 S. Calhoun Rd., New Berlin, Wis. 53151

Filed Apr. 29, 1983, Ser. No. 489,904

Int. Cl.³ H02J *9/06*

U.S. Cl. 307—67 **9 Claims**



1. An uninterrupted power source system for providing power from a utility line during normal operation (stand-by mode) and from a stored power system during interruptions in utility power (operate mode), said uninterrupted power source system comprising:

alternator means for generating a power output;

motor means for driving said alternator means at a speed whereby said power output may be generated, said motor means being responsive to power from said utility line during said standby mode and to power from said stored power system during said operate mode, to drive said alternator means;

said stored power system comprising:

current source means having an output connected to said motor means, for powering said motor means;

reverse power detecting means for providing an indication that power is flowing from said motor means into said utility power line;

switch means, responsive to said reverse power indication, for interrupting the power flow between said motor means and said utility power line; and

means, responsive to said current source means output and said alternator means output, for controlling power characteristics of said current source means output.

4,465,944

THREE STATE INPUT CIRCUITS

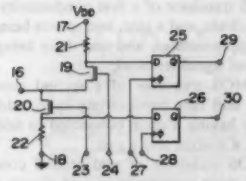
Yasuhiro Shin, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,860

Claims priority, application Japan, Jan. 19, 1981, 56-5110

Int. Cl.³ H03K *19/096, 19/20, 17/693*

U.S. Cl. 307—473 **10 Claims**



1. A three state input circuit comprising:

a first load means having two terminals, one of which is coupled to a first fixed potential source;

a first switch means coupled between a signal input terminal and the other terminal of said first load means and controlled by a second timing signal;

a second load means having two terminals, one of which is coupled to a second fixed potential source;

a second switch means coupled between said signal input terminal and the other terminal of said second load means and controlled by a first timing signal;

a first memory means controlled by a fourth timing signal for selectively storing a first signal potential level of said other terminal of said first load means so as to output said signal potential level to a first signal output terminal; and

a second memory means controlled by a third timing signal for selectively storing a second signal potential level of said other terminal of said second load means so as to output said second signal potential level to a second signal output terminal;

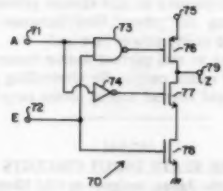
wherein said circuit sequentially and periodically operates such that in response to said first and second timing signals, said circuit sequentially and periodically closes one of said first and second previously open switch means, then opens said one switch means, then closes the other of said first and second switch means, then opens said other switch means.

4,465,945

TRI-STATE CMOS DRIVER HAVING REDUCED GATE DELAY

Patrick Yin, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Sep. 3, 1982, Ser. No. 414,743
Int. Cl.³ H03K *19/017, 19/094, 19/20*
U.S. Cl. 307—473 **12 Claims**



1. A Tri-State buffer having a data signal input terminal for receiving a data signal, an enable signal input terminal for receiving an enable signal, and an output signal terminal for providing an output signal, comprising:

a first MOS transistor of a first conductivity type having a source, a drain, and a gate, said source being connected to a first supply voltage, and said drain being connected to said output signal terminal;

a second MOS transistor of a second conductivity type opposite said first conductivity type, said second MOS transistor having a drain connected to said output signal terminal, a source, and a gate;

a third MOS transistor of said second conductivity type having a drain connected to said source of said second MOS transistor, a source connected to a second supply voltage, and a gate connected to said enable input signal terminal;

a NAND gate having a first input lead connected to said data signal input terminal, a second input lead connected to said enable signal input terminal, and an output lead connected to said gate of said first MOS transistor; and

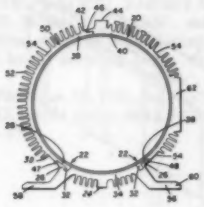
an inverter having an input lead connected to said data signal input terminal and an output lead connected to said gate of said second MOS transistor.

4,465,946

INTERLOCKING FRAME ASSEMBLY FOR AN ELECTRIC MOTOR STATOR

H. Robert Springer, St. Louis, Mo., assignor to Century Electric, Inc., St. Louis, Mo.

Continuation of Ser. No. 291,467, Aug. 10, 1981, abandoned. This application Aug. 22, 1983, Ser. No. 525,137
Int. Cl.³ H02K *5/18*
U.S. Cl. 310—42 **21 Claims**



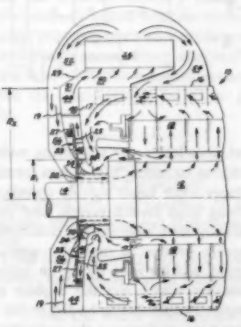
1. A frame assembly for a dynamoelectric machine having a wound core and adapted to be assembled in close thermal contact to said wound core comprising at least three arcuate frame units, and an interlocking means integrally formed at least at one end of each frame unit, said interlocking means providing for sliding engagement therebetween as adjacent frame units are moved longitudinally with respect to each other and fitted against the wound core, the interlocking means upon engagement having means to resist substantial relative movement of their respective frame units about the core so that the frame assembly may be easily assembled about the wound core and remain substantially self aligned as the frame units are permanently fixed in position.

4,465,947

FAN DIFFUSER AND COLLECTOR COMBINATION FOR COOLING SYSTEMS IN DYNAMOELECTRIC MACHINES

Anthony F. Armor, Sunnyvale, Calif.; Allan C. Shartrand, Scotia, N.Y.; David A. Noel, Old Orchard, Me., and Kathryn M. Rominger, Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 13, 1983, Ser. No. 513,174
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—59 **13 Claims**



1. A fan diffuser and collector combination as part of a cooling system for a gas cooled dynamoelectric machine, said machine having a stator and a rotor both being surrounded by a frame wrapper, said machine including an inner end plate shield and an outer end plate shield axially spaced apart and

defining an annular chamber there between and located within said frame wrapper both at one end of said machine, said cooling system including a fan located on the rotor radially coextensive with the annular chamber defined by said inner and outer shields, said fan having means to circulate the gas through said cooling system by expelling said gas radially through said annular chamber, said frame wrapper having an arcuate port therethrough which allows said gas to pass from said annular chamber to means for cooling located atop said frame wrapper and to the remaining elements of said cooling system, said fan diffuser and collector combination comprising:

a disk having a radially extensive edge, said disk located within the radially inner portion of said annular chamber, being foreshortened with respect to said frame wrapper, and having an inboard surface which is substantially parallel to an adjacent surface of one of said shields, said inboard surface and said adjacent surface defining a diffuser channel therebetween which receives substantially all of the gas expelled by said fan, and said channel transforming a portion of the gas' velocity into static pressure; and

a plurality of supports located in said diffuser channel at substantially evenly spaced intervals circumferentially about said rotor, and said supports maintaining the parallel spacing between said inboard surface of said disk and said one shield.

4,465,948

DEVICE FOR COOLING A REVERSIBLE MOTOR

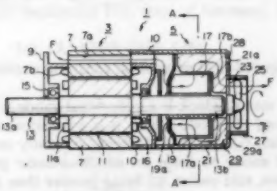
Shigeaki Oyama, Hachioji; Kosei Nakamura; Yoshiyuki Hayashi, both of Hino, and Shigeru Koyoshida, Omuta, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

PCT No. PCT/JP81/00283, 371 Date Jun. 14, 1982, 102(e) Date Jun. 14, 1982, PCT Pub. No. WO82/01447, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 14, 1981, Ser. No. 395,035

Int. Cl.³ H02K 9/06

U.S. Cl. 310—62 **11 Claims**



1. A device for cooling a reversible motor, said motor including a rotary shaft, a rotor mounted on said rotary shaft, a stator surrounding said rotor, and a motor case supporting said stator and said rotary shaft and having a front end and a rear end, said stator having a plurality of elongated holes extending axially therethrough, said motor case including a cooling chamber coaxially arranged on said rear end thereof, said rotary shaft having a portion extending into said cooling chamber beyond said rear end; said device for cooling comprising:

blade-type cooling fins attached to said portion of said rotary shaft extending into said cooling chamber,

an exhaust blower provided outside of said cooling chamber adjacent an axially positioned exhaust hole for expelling cooling air in an axial direction, and

fixed rectifying vane means mounted in a space in said cooling chamber between said blade-type cooling fins and said exhaust hole maintaining a small clearance relative to a circumference at an end of said rotary shaft, such that the cooling air which has passed through said blade-like cooling fins is rectified in the axial direction via said fixed rectifying vane means and is expelled by said exhaust blower from said cooling chamber in an axial direction.

4,465,949

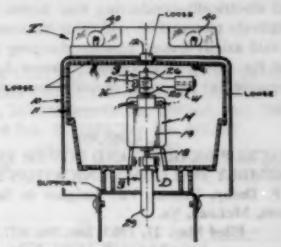
ELECTROMECHANICAL FREQUENCY GENERATOR-MODULATOR KINETIC STORAGE DEVICE

Robert J. Knauff, P.O. Box 2270, West Hollywood, Calif. 90028

Filed Aug. 22, 1983, Ser. No. 525,058

Int. Cl.³ H02K 7/06

U.S. Cl. 310—81 **36 Claims**



1. A frequency generator-modulator and kinetic device for sensory effects as a result of speed changes, and including:

a direct current motor having widely separated field poles and armature poles attracted thereto for alignment therewith in a dwell position, and having widely spaced commutator bars in contact with brushes in a battery circuit when rotated from a dwell position to accelerate the motor armature,

and a kinetic alternator means for receiving energy as a result of motor armature acceleration and momentarily decelerating the motor armature in a dwell position, and for storing said energy with the motor armature in said dwell position, and for reapplying said energy to and restarting the motor armature from said dwell position,

whereby momentum applied to the kinetic alternator means during commutation momentarily accelerates the same and decelerates the motor armature and subsequently restarts the motor armature for continued operation of the motor at varied angular velocity.

4,465,950

SYNCHRON MOTOR

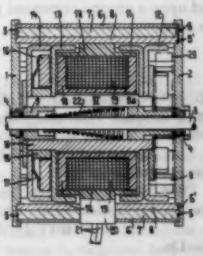
Kurt Güttinger, Murten, Switzerland, assignor to Sodeco-Saia SA, Geneva, Switzerland

Filed Jul. 27, 1982, Ser. No. 402,247

Claims priority, application Switzerland, Aug. 19, 1981, 5353/81

Int. Cl.³ H02K 21/00

U.S. Cl. 310—162 **11 Claims**



1. A synchronous motor comprising:

a stator having a coil defining a void, and permanent magnet poles; and

a rotor having a tubular rotor hub disposed in said coil void, said tubular hub having axial ends, a pair of pole rings

connected to each axial end of said tubular hub said pairs of pole rings being disposed for cooperation with said permanent magnet poles, one pole ring of at least one of said pairs of pole rings being axially spaced and circumferentially shifted relative to the other pole ring of said pair, said pole ring of said axially-spaced pair closest to the end of said tubular hub being the outer pole ring and the other ring of said axially-spaced pair being the inner pole ring, and electrically-conducting disc means frictionally and rotatively mounted on said rotor between said pole rings of said axially-spaced pair for damping rotor oscillation and for acting as a loading element for phase-shifting magnetic flux generated in said outer pole ring.

4,465,951

BACKUP BEARING AND POWER TRANSFER ASSEMBLY FOR COMMUNICATION SATELLITE

James F. Dalby, Reston, Va., assignor to Satellite Business Systems, McLean, Va.

Filed Mar. 21, 1983, Ser. No. 477,546
Int. Cl.³ H02K *16/00, 7/20*
U.S. Cl. 310—114 **7 Claims**

1. In a satellite system having a despun shelf and a spun shelf, an apparatus for coupling said shelves comprising:

first and second bearing members, the first of said bearing members having a stator fixed to said spun shelf, and a rotor integral with the stator of said second bearing, said second bearing having a rotor terminating in a flange extending over said second bearing stator and connected to said despun shelf, said flange having first and second apertures located on said flange opposite corresponding apertures on said second bearing stator; and

first and second actuator operated retractable pins located in said apertures, said pins maintaining said second bearing rotor locked with respect to said second stator, whereby said second rotor, second stator and first rotor rotate with respect to said spun shelf, until said retractable pins are retracted upon a ground command permitting said second rotor to rotate.

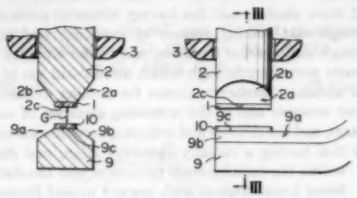
4,465,952

SPARK PLUG FOR INTERNAL COMBUSTION ENGINES

Yasuyuki Sato, Kasugai; Norihiko Nakamura, Mishima, and Tatsuo Kobayashi, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 4, 1982, Ser. No. 354,793
Claims priority, application Japan, Mar. 31, 1981, 56-49162
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—136 **5 Claims**

1. A spark plug for internal combustion engines, including a center electrode and a grounded electrode, said center and grounded electrodes having surfaces disposed adjacent to a spark gap between said electrodes and directed to but spaced from each other, wherein at least one of said electrodes has substantially planar side faces converging to the surface of said one electrode directed to the other electrode and wherein at least said one electrode is provided with a piece of a noble



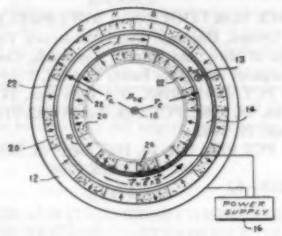
metal secured to the surface of said one electrode directed to the other electrode.

4,465,953

RIPPLED-FIELD MAGNETRON APPARATUS

George Bekefi, Brookline, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 16, 1982, Ser. No. 418,867
Int. Cl.³ H01J *25/50*
U.S. Cl. 315—39.71 **10 Claims**



1. A rippled-field magnetron apparatus comprising in combination:

a first means which is a cylindrical anode with a radius, r_a,

a second electrode which is a cylindrical cathode with a radius, r_c, said cathode being coaxially enclosed withing said anode to form an anode-cathode gap, d, therebetween, said radius, r_a, being greater than radius, r_c,

means for generating a uniform, axial magnetic field positioned within said cylindrical cathode,

means for generating a radial electric field in said anode-cathode gap, d, and,

a periodic magnetic field arranged azimuthally along both said anode and cathode to form a wiggler field, said wiggler field being generated in a radial direction with respect to said anode and cathode.

4,465,954

DISCHARGE LAMP STARTING AND OPERATING CIRCUIT

Nikolaos Barakitis, Haverhill, and Sheppard Cohen, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 376,804, May 10, 1982. This application Feb. 13, 1984, Ser. No. 578,328
Int. Cl.³ H05B *39/04*
U.S. Cl. 315—104 **10 Claims**

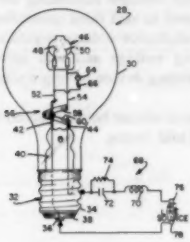
1. A high intensity discharge lamp comprising

a first hermetically sealed envelope having a vacuum and a pair of support wires sealed into and extending therethrough;

a hermetically sealed arc tube disposed within said first

envelope and having a pair of electrical leads sealed therein and extending therethrough with one of said pair of electrical leads of said arc tube connected to one of said pair of support wires of said first sealed envelope;

a starter device sealed in a vacuum and including a normally-closed (N/C switch coupled across said pair of support wires of said first sealed envelope and having first and



second contacts with said first contact coupled by at least one bimetal and an electrical conductor to one of said pair of support wires and one of said pair of electrical leads and said second contact coupled to said support wire connected to said electrical lead; and

a spark gap means shunting said pair of electrical leads of said arc tube and having an arc over voltage greater than the breakdown voltage of said arc tube.

4,465,955

DC SHUNT TRACTION MOTOR DRIVE SUPPLIED FROM AN ENERGY ACCUMULATOR

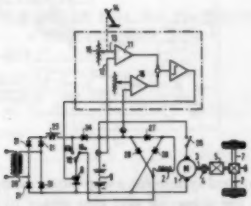
Walter Lössel, Zirndorf, and Klaus Schmidhuber, Rottenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,776

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1982, 3200510

Int. Cl.³ H02P *7/06, 5/16*

U.S. Cl. 318—139 **2 Claims**



1. An electric drive arrangement for a vehicle, the electric drive arrangement being of the type having a DC shunt propulsion motor which is supplied electrical energy from an energy storage device, the DC shunt propulsion motor having an armature which is connected to the energy storage device and a field winding, an electronic DC control element connected to the energy storage device and to the field winding of the DC shunt propulsion motor for controlling the speed of the motor, and a transmission for providing a variable reduction ratio arranged intermediate of an output shaft of the DC shunt propulsion motor and a drive axle of the vehicle, the electric drive arrangement further comprising:

voltage control means having an input for receiving a signal responsive to a current flowing through the field winding and an output connected to the electronic DC control element whereby the electronic DC control element is adapted to control a charging current of the energy storage device; and

switch means having at least first and second positions whereby when said switch means is in said first position the field winding is connected to the electronic DC control element and to the energy storage device, and when said switch means is in said second position, the electronic DC control element is shunted across the energy storage device.

4,465,956

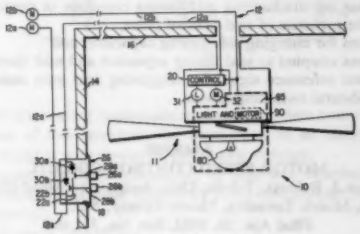
CONTROL CIRCUIT FOR SWITCHING DUAL FUNCTION ELECTRICAL APPLIANCES

Ricky C. Fowler, 2426 Village Green, Garland, Tex. 75042

Filed Feb. 25, 1983, Ser. No. 469,957

Int. Cl.³ H02P *7/00*

U.S. Cl. 318—268 **12 Claims**



1. A control circuit for switching an electrical applicance having a first and a second function powered between a hot line connected to a power source and a neutral line, said control circuit comprising:

input means connected to said hot line for selectively establishing a first input signal and second input signal on said hot line;

means connected to said hot line for generating a first control signal as a function of said first input signal, the function being substantially independent of the second input signal and the power for the electrical appliance which are also conducted on the hot line;

first switch means responsive to said first control signal to control the first function of the electrical appliance;

means connected to said hot line for generating a second control signal as a function of said second input signal, said function being substantially independent of the first input signal and the power for the electrical appliance which are also conducted on the hot line; and

second switch means responsive to said second control signal to control the second function of the electrical appliance.

4,465,957

CIRCUIT AND METHOD FOR CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR

Charles R. Crockett, Arlington, Tex., assignor to Teccor Electronics, Inc., Irving, Tex.

Continuation of Ser. No. 272,554, Jun. 11, 1981, abandoned. This application Feb. 17, 1983, Ser. No. 467,197

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—345 D **8 Claims**

1. A circuit for controlling the speed of a motor powered by an alternating current source in response to a direct current reference signal, said circuit comprising:

a gate controlled bilateral switching device coupled in series with said motor;

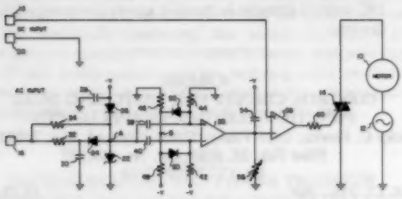
means for half wave rectifying said alternating current power source;

means for generating a square wave signal synchronized to

the frequency of said half wave rectified alternating current source;

means for differentiating said square wave signal wherein a control pulse is generated at each voltage transition of said square wave signal;

a timing capacitor;



means for discharging said timing capacitor in response to the presence of said control pulse;

means for charging said timing capacitor; and

means coupled to said timing capacitor and said direct current reference signal for triggering said gate controlled bilateral switching device.

4,465,958

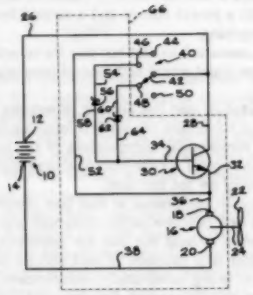
MOTOR SPEED CONTROL CIRCUIT

William J. Roberts, Toledo, Ohio, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 26, 1982, Ser. No. 371,408

Int. Cl.³ H02P *5/06*

U.S. Cl. 318—347 **2 Claims**



1. A motor speed control circuit, comprising:

a source of direct current power;

a direct current motor;

a semiconductor device interposed between said direct current motor and a first terminal of said source of direct current power, said semiconductor device having a first controlled terminal and a second controlled terminal and a third control terminal, said first controlled terminal being electrically connected to said source of direct current power, said second controlled terminal being electrically connected to a first terminal of said motor;

said motor having said first terminal and a second terminal, said second terminal of said motor being connected to a second terminal of said source of direct current power;

a selector switch having a movable wiper element and a plurality of fixed contacts;

said movable wiper element being electrically connected to said first terminal of said source of direct current power;

a first one of said plurality of fixed contacts being electrically connected to said second controlled terminal for shunting said semiconductor device;

a second one of said plurality of fixed contacts being connected to a first terminal of a first semiconductor voltage regulating device, a second terminal of said first semiconductor voltage regulating device being electrically connected to said third controlled terminal;

a third one of said plurality of fixed contacts being connected to a first terminal of a second semiconductor voltage regulating device, a second terminal of said second semiconductor voltage regulating device being electrically connected to said third controlled terminal;

said first semiconductor voltage regulating device having a first operating voltage and said second semiconductor voltage regulating device having a second operating voltage;

said speed control circuit being adapted to stepwise control the speed of said motor.

4,465,959

STEP MOTOR DRIVE CONTROL

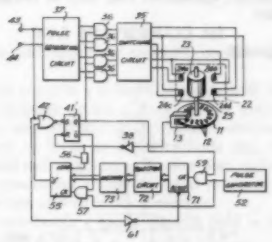
Torao Yajima, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Jul. 20, 1982, Ser. No. 400,177

Claims priority, application Japan, Jul. 21, 1981, 56-114199; Dec. 22, 1981, 56-207376; Apr. 9, 1982, 57-59324; Apr. 9, 1982, 57-59325

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **27 Claims**

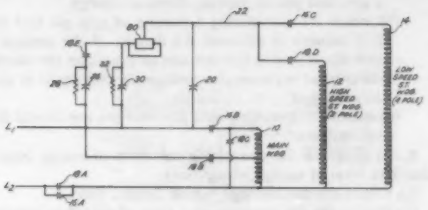


1. A drive control system for a step motor comprising motor driving means for actuating said step motor to advance said step motor from a first step position to a second step position, detector means for detecting when said step motor has been advanced from said first step position towards said second step position, said detector means detecting the advance of said step motor when located at a substantially central position between said first and second step positions and producing a timing signal representative of the central position of said step motor, and drive control circuit means for selectively actuating said motor driving means in a first phase to advance said step motor from said first step position, said timing signal being applied to said drive control circuit means, said drive control circuit means deactuating said motor driving means in a predetermined time interval when said timing signal is applied thereto, said drive control circuit means reactuating said motor driving means in said first phase after the passage of said predetermined time interal, whereby said step motor is stopped and held in said second step position.

4,465,960
STARTING ARRANGEMENT FOR TWO-SPEED SINGLE-PHASE REFRIGERANT COMPRESSOR MOTOR

David M. Pfarrer, Hurst, Tex., assignor to Lennox Industries, Inc., Dallas, Tex.

Filed Aug. 9, 1982, Ser. No. 406,360
Int. Cl.³ H02P 1/44
U.S. Cl. 318—774 4 Claims



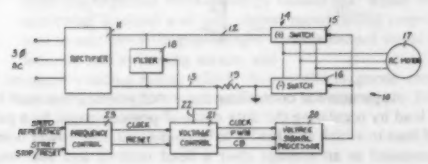
1. In an improved control circuit for use with a single-phase two-speed motor of the type in which said circuit comprises a main winding, a start winding means including a low speed start winding and a high speed start winding in circuit with the main winding and adapted to provide either a high speed operation or low speed operation, low speed contractor means, high speed contractor means, start capacitor means and run capacitor means, wherein the improvement comprises:

start assist means electrically disposed in said circuit between the start capacitor means and the run capacitor means, said start assist means being a positive temperature coefficient thermistor, said thermistor limiting the current to the start windings from a source of power and limiting the current discharged into the start capacitor means from the run capacitor means when the two speed motor is de-energized, said thermistor turning off the start capacitor means after said motor reaches operating speed.

4,465,961
MOTOR CONTROL SYSTEM

Paul J. Landino, Orange, Conn., assignor to Zycron Systems, Inc., Orange, Conn.

Filed Jun. 15, 1981, Ser. No. 273,769
Int. Cl.³ H02P 5/34
U.S. Cl. 318—811 13 Claims

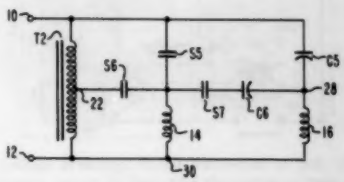


1. In a control system for an alternating current motor having a switching means for switching connections of a DC supply to the windings of the motor at a rate which determines the speed of the motor and for a time duration which determines the power supplied to the motor, said switching occurring in response to pulses, means for supplying a pulse train in response to a speed signal, said pulse train having a frequency which determines the speed of the motor, and means responsive to said speed signal for providing a width modulated pulse for controlling the duty cycle of said switching means, the improvement comprising means for deriving a signal indicative of DC line current, means for comparing said speed signal and said current indicative signal and deriving an error signal, means for generating another pulsewidth modulated signal as a function of said error signal, and means for controlling the duty cycle of the switching means as a function of said another signal.

4,465,962
PERMANENT SPLIT CAPACITOR SINGLE PHASE ELECTRIC MOTOR SYSTEM

Herbert S. Kirschbaum, Asheville, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 28, 1983, Ser. No. 479,776
Int. Cl.³ H02P 5/28
U.S. Cl. 318—817 7 Claims



1. An alternating current electric motor system comprising:

a pair of line terminals for connection to an alternating current power source having a first voltage;

an autotransformer connected to said line terminals for producing a second voltage on a first intermediate voltage terminal;

a first stator winding;

means for connecting said first stator winding between said line terminals for operation at a first speed;

means for connecting said first stator winding between one of said line terminals and said first intermediate voltage terminal for operation at a second speed;

a capacitive voltage divider connected to said line terminals for producing a third voltage on a second intermediate voltage terminal, with said second intermediate voltage terminal being a connection within said capacitive voltage divider;

a first capacitor;

a second stator winding being connected in series with said first capacitor to form a circuit branch which is connected to said line terminals;

means for connecting said second stator winding between one of said line terminals and said second intermediate voltage terminal for operation at said second speed; and

wherein said capacitive voltage divider includes a second and a third capacitor connected in series with said second intermediate voltage terminal being the connection between said second and third capacitors.

4,465,963
BATTERY CHARGING SYSTEM UTILIZING OPTICAL GAS SENSOR

Barry S. Iseard, Freeport, The Bahamas, assignor to Oakwood Energy Group, Inc., Dayton, Ohio

Filed Nov. 12, 1982, Ser. No. 441,171
Int. Cl.³ H02J 7/04
U.S. Cl. 320—46 5 Claims

1. A battery charging system of the type including a pressure transducer which manifests a varying resistance in accordance with the pressure of gases generated by the battery cells; and circuit means, responsive to said transducer resistance for, generating a charging current to said battery having an average value in accordance with said pressure; the improvement wherein said pressure transducer comprises:

first and second enclosures;

a first flexible diaphragm, disposed in a wall of said first enclosure;

a second flexible diaphragm disposed in one wall of said second enclosure;

means for relatively disposing said diaphragms in opposition to form a channel therebetween;

means for excluding ambient light from said channel;

a light source disposed at one end of said channel; and

photosensitive means for presenting a resistance value inversely proportional to total illumination impinging thereon, disposed at the other end of said channel;

means for communicating gas generated by said battery to said enclosures such that increases in said pressure cause said diaphragms to expand toward each other into said channel, decreasing the total illumination impinging on said photosensitive means and increasing the resistance thereof in accordance with said increase in said pressure.

4,465,964

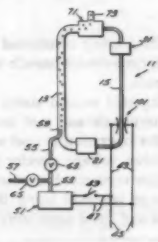
ENERGY CONVERSION SYSTEM

John H. Cover, 24742 Via San Fernando, Mission Viejo, Calif. 92691

Continuation-in-part of Ser. No. 342,391, Jan. 25, 1982. This application Jan. 13, 1983, Ser. No. 457,627

Int. Cl.³ H02N *4/02*; C25B *1/00*

U.S. Cl. 322—2 R **16 Claims**



1. An apparatus for converting thermal energy into an alternate form of energy, comprising:

(1) a fluid loop through which flows a liquid, said loop comprising:

(a) a first substantially vertical column;

(b) a second substantially vertical column;

(c) interconnection means between the top of said first column and the top of said second column; and

(d) interconnection means between the bottom of said first column and the bottom of said second column;

(2) means for creating a temperature differential between portions of said liquid in each column by heating the portion of said liquid in said first column and cooling the portion of said liquid in said second column to form a density differential in said liquid and establish a convective flow of said liquid through said loop;

(3) electrical generator means for generating electrical energy from said flowing liquid, the amount of electrical energy generated being proportional to the velocity of the flow of said liquid; and

(4) means for supplementing said convective flow to increase the electrical energy generated by said electrical generator means by increasing the density differential between the liquid in each of said columns, comprising:

(a) an electrolytic gas generator coupled to said electrical generator means for using at least a portion of said electrical energy to electrolyze a second liquid to form a gas, said gas containing chemical energy;

(b) means for introducing a portion of said gas into said first column to decrease the density of the portion of said liquid in said first column and increase the density differential between the portions of said liquid in each column; and

(c) means for removing said gas near the top of said first said column.

6. An apparatus for converting one form of energy into an alternate form of energy, comprising:

(1) a fluid conduit through which flows a fluid;

(2) first means for establishing a flow of said fluid through the conduit;

(3) second means coupled to said conduit for generating electrical energy from said flowing fluid;

(4) third means coupled to said second means for using at least a portion of said electrical energy to form a gas, said gas pressurized by said third means; and

(5) fourth means for using at least a portion of said gas pressurized by said third means to increase the rate of flow of said fluid through said fluid conduit.

4,465,965

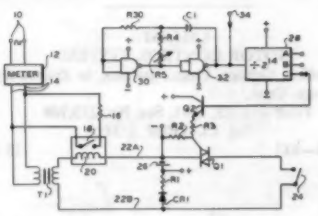
POWER LIMITING APPARATUS

Alan Chernotsky, 36 Lakeshore Dr., Rockaway, N.J. 07866, and Richard Satz, 20 Cedar La., Succasunna, N.J. 07876

Filed Oct. 26, 1981, Ser. No. 310,879

Int. Cl.³ G05F *1/10*

U.S. Cl. 323—239 **16 Claims**



1. Apparatus for controlling measured power consumed by a load by regulating the duty cycle of power carried by a pair of lines to which said load is to be connected, said power being measured as an average over a fixed interval and said lines intermittently conducting electrical power, said apparatus comprising:

clock means for providing a timing signal having a duration corresponding to a fractional portion of said fixed interval, said clock means providing at least one timing signal during said such interval;

conversion means driven by said lines for converting intermittent electrical signals thereon to uninterrupted electrical power and supplying said uninterrupted power to said clock means; and

switch means responsive to said timing signal for supplying power to a load connected to said lines only during said fractional portion of said fixed interval during which said timing signal is present to establish a desired duty cycle for said load as a function of the manner in which power is measured.

4,465,966

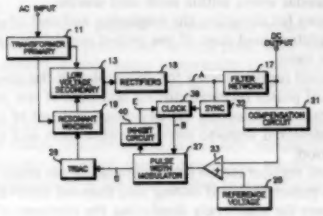
CONTROLLED FERRORESONANT VOLTAGE REGULATOR PROVIDING IMMUNITY FROM SUSTAINED OSCILLATIONS

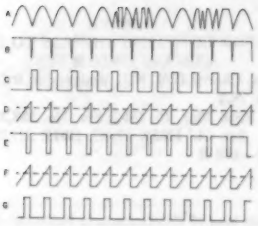
James F. Long, Elmhurst, and Brian J. Budnik, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1982, Ser. No. 366,111

Int. Cl.³ G05F *3/06*

U.S. Cl. 323—248 **5 Claims**





1. A ferroresonant power supply operating from AC input signal to provide a regulated output, said power supply comprising:

a secondary including a transformer core for receiving said AC input signal by transformer action and for developing an output,

switching means,

a feedback circuit including a clock and an output means, said clock being enabled to respond to said secondary output for only a portion of the frequency period proximate the expected zero-crossings of said AC signal and otherwise disabled and said output means being responsive to said clock for providing a variable output signal to activate said switching means, and

resonant winding means which changes the magnetic characteristics of said transformer core in response to said switching means.

4,465,967

CURRENT SUPPLY CIRCUIT

Michio Tokunaga, Zushi; Junjiro Kitano, Fujisawa; Akio Sagawa, Hitachi; Toshio Hayashi, Iruma, and Kazuo Hamazato, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,791

Claims priority, application Japan, Jan. 28, 1981, 56-10244; Jan. 28, 1981, 56-10246

Int. Cl.³ G05F *1/46*

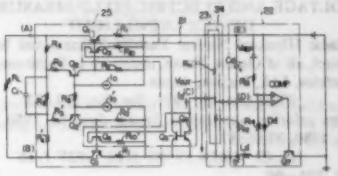
U.S. Cl. 323—285 **8 Claims**

1. A current supply circuit with a constant resistance power feed characteristic for connecting a power source to a load so that said current supply circuit appears to be a constant resistance to said load comprising:

a. a load current detecting circuit for detecting a load current flowing through the load;

b. a DC power feed circuit operable independently of said power source and having an equivalent internal resistance and an equivalent internal power supply;

c. a DC-DC converter circuit inserted in series between the power source and said DC power feed circuit including means for generating an output voltage independently from a voltage output of said power source;



d. a voltage detecting circuit connected to said DC-DC converter circuit for detecting the output voltage of said DC-DC converter circuit; and

e. operation circuit means connected to receive the output of said load current detecting circuit and said voltage detecting circuit for controlling said DC-DC converter circuit so as to produce a voltage representative of the sum of a voltage drop across said load and a voltage necessary for allowing said DC power feed circuit to operate in accordance with a change of the load resistance.

4,465,968

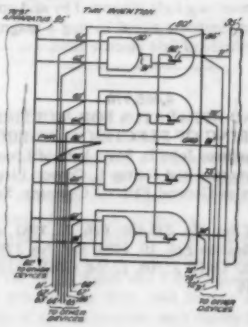
METHOD AND APPARATUS FOR TESTING OPEN COLLECTOR ELECTRICAL CIRCUIT DEVICES

Olgerts Stauers, Lakewood, Colo., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,154

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 R **4 Claims**



4. Apparatus for testing a plurality of open collector electrical circuit devices for determining individual device failure wherein each device has a number of input and output leads, a power lead and a ground lead, the apparatus comprising:

means for interconnecting each of the input and output leads of an open collector electrical circuit device to be tested with the corresponding input and output lead of every other open collector electrical circuit device of the plurality of said devices to form a number of individual common input and output lead connections among the plurality of said devices;

means for forming a common power lead interconnection with the power lead for each said device of the plurality of said devices; and

test apparatus, interconnecting with the common input and output leads, and the power lead, comprising means for transmitting test signals over the common input and output leads, and power to the power lead; and

means for monitoring the response signals on the individual ground leads to determine individual open collector electrical circuit device failures.

4,465,969

VOLTAGE AND ELECTRIC FIELD MEASURING DEVICE USING LIGHT

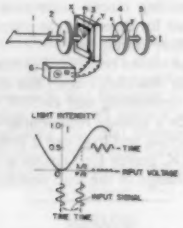
Koji Tada; Hirokuni Nanba; Yoshiki Kuhara, and Masayoshi Tatsumi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Isajam, Japan

Filed Oct. 16, 1980, Ser. No. 197,432

Claims priority, application Japan, Jan. 12, 1980, 55-2274; Jul. 14, 1980, 55-96617

Int. Cl.³ G01R *19/00, 5/28;* **G02F** *1/26*

U.S. Cl. 324—96 **5 Claims**



1. An electric field measuring device using light, comprising: a source of light; an optical system comprising a polarizer, an electro-optic crystal, a wave plate, and an analyzer arranged in the series with one another in the path of said light, an electric field to be measured being imposed upon said electro-optic crystal, and said electro-optic crystal being made of a bismuth silicon oxide material having a cubic crystal structure; and detector means receiving light outputted by said optical system for producing an electrical signal having a magnitude determined by a magnitude of said electric field.

4,465,970

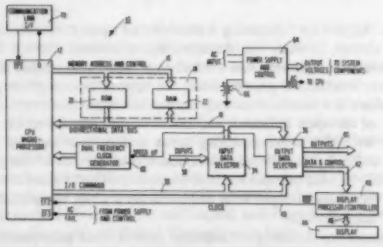
METHOD AND APPARATUS FOR MULTIPLE RATE METERING OF ELECTRICAL ENERGY

Donald V. DiMassimo; John B. May, both of Liverpool; Brian C. Johnson, Syracuse, and Jeffrey L. Cooper, Liverpool, all of N.Y., assignors to General Electric Company, Somersworth, N.H.

Continuation of Ser. No. 238,450, Feb. 26, 1981, abandoned. This application Feb. 10, 1984, Ser. No. 578,315

Int. Cl.³ G01R *15/08, 11/64;* **G06F** *15/20*

U.S. Cl. 324—116 **14 Claims**



1. A programmable multiple rate electrical metering system for registering electrical energy consumed by a monitored load, said system comprising:

a. input means adapted to receive and count electrical pulses which are representative of electrical energy consumption by said load;

b. means for detecting the beginning and end of at least one season;

c. first register means for accumulating the count of electrical pulses received during said season;

d. means for detecting the beginning and end of at least one calendar event within each said season;

e. means for detecting the beginning and end of at least one predetermined time of use period within each said calendar event;

f. second register means for accumulating the count of electrical pulses received during said time of use period;

g. means for detecting the beginning and end of at least one preselected demand interval within each said time of use period;

h. third register means for accumulating the count of electrical pulses received during said demand interval; and

i. means for selectively displaying the contents of said first, second and third register means in units of electrical energy consumption.

4,465,971

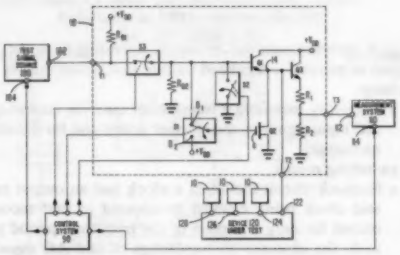
CIRCUIT FOR COUPLING SIGNALS TO OR FROM A CIRCUIT UNDER TEST

Isaac Abeyta, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1982, Ser. No. 358,261

Int. Cl.³ H03K *17/62;* **G01R** *31/28*

U.S. Cl. 324—158 R **8 Claims**



1. A circuit for controlling signals between a signal source at a first terminal, a device test at a second terminal and a metering means at a third terminal where said device under test may be either a source of signals or a load, said circuit comprising:

switch means having first and second switch conditions;

means coupled to said switch means for coupling signals from said second terminal to said third terminal independent of the switch condition of said switch means, for in said first switch condition coupling signals from said source at said first terminal to said second and third terminals and for in said second switch condition isolating signals at said second and third terminals from signals at said first terminal.

4,465,972

CONNECTION ARRANGEMENT FOR PRINTED CIRCUIT BOARD TESTING APPARATUS

James M. Sokolich, Cliffside Park, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 5, 1982, Ser. No. 365,670

Int. Cl.³ G01R *31/02, 15/12, 1/06*

U.S. Cl. 324—158 F **6 Claims**

1. An arrrangement for electrically connecting printed cir-

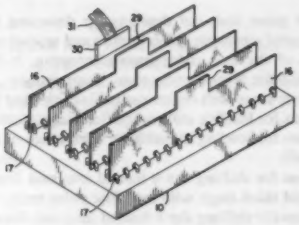
cuit boards under test to test apparatus, said connecting arrangement comprising:

a plurality of conductive probes in a predetermined arrangement and placed against a printed circuit board under test to establish a plurality of electrical connections thereto;

an insulating plate receiving the probes in said predetermined arrangement and capable of supporting the probes against ones of the printed circuit boards under test when said plurality of conductive probes are mounted in holes through the plate and extending out of either side of said plate;

a plurality of first printed circuit board means mounted substantially perpendicular to said plate with one end of said contact probes being electrically connected to first conductive paths on said plurality of first board means; and

integrated circuit means mounted to said first printed circuit board means and connected to said first conductive paths, the integrated circuit means connecting selected ones of said plurality of conductive probes to said testing apparatus to test electrical characteristics of said printed circuit board under test, the integrated circuit connecting means including a plurality of electronic switches organized into at least two groups with one side of each switch connected to a bus, and a multi-bit storage means wherein each bit location of said storage means is associated with at least one of said electronic switches, the binary number contents of a bit location of said storage means is used to control the operation of the associated switches, and a multi-bit binary number is placed in said stoage means to control the operation of said electronic switches, said integrated circuit means comprising individual integrated circuits on each of said plurality of first printed circuit boards, wherein said storage means comprises an individual storage means on each of said individual integrated circuits, and wherein said plurality of electronic switches comprises an individual plurality of electronic switches on each of said individual integrated circuits, said first conductive paths connecting said probes to said electronic switches which are selectively operated to connect said probes to said busses and thence to said testing apparatus.



4,465,973

PAD FOR ACCELERATED MEMORY TEST

Roger S. Countryman, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 17, 1982, Ser. No. 378,555

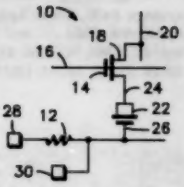
Int. Cl.³ G01R *31/00*

U.S. Cl. 324—158 R **7 Claims**

1. A semiconductor memory having capacitive storage elements on a substrate in which each capacitive storage element has first and second electrodes, the first electrode for coupling to a bit line, comprising:

a polysilicon resistor coupling a power supply bonding pad to the second electrode of the capacitive storage elements;

an insulating layer between the second electrode and the substrate; and



a test pad connected to the one electrode to facilitate performing an insulating layer integrity test.

4,465,974

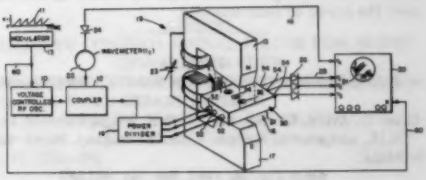
APPARATUS FOR MEASURING MAGNETIC FIELD CHARACTERISTICS OF MAGNETIC MATERIALS

Richard A. Sparks, Bedford, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 126,260, Mar. 3, 1980, Pat. No. 4,340,861. This application May 7, 1982, Ser. No. 375,920

Int. Cl.³ G01R *31/02, 33/12, 35/00;* **G01N** *27/77*

U.S. Cl. 324—205 **4 Claims**



1. Apparatus for measuring a magnetic field comprising:

means for providing an input radio frequency signal;

means for sweeping the frequency of such signal over a predetermined range of frequency;

a body member having a plurality of input transmission lines each line being fed by a substantially equal in phase portion of the swept signal and a corresponding plurality of output transmission lines, and having a corresponding plurality of spaced cavities each cavity being associated with a corresponding one of such input lines and a corresponding one of such output lines;

a plurality of bodies comprising gyromagnetic material, each one of such bodies disposed within a corresponding one of the plurality of such cavities and disposed adjacent the input and output lines to couple a portion of the radio frequency energy fed to the input line, to the output line to produce output resonant frequency signals in accordance with the magnetic field;

means for comparing the output resonant frequency signals from each cavity; and

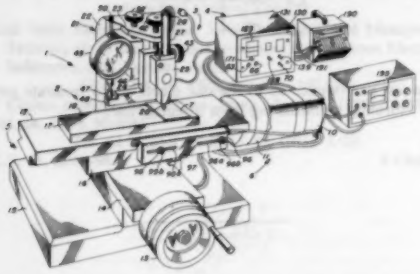
means for adjusting the orientation of each of such bodies within such cavity in accordance with the compared output resonant frequency signals from each cavity.

4,465,975

SCANNING APPARATUS AND METHOD FOR MEASURING A MAGNETIC FIELD PRODUCED BY A SAMPLE

John P. Porter, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 19, 1980, Ser. No. 188,704
Int. Cl.³ G01R 33/02, 33/12; G01N 27/72
U.S. Cl. 324—205 23 Claims



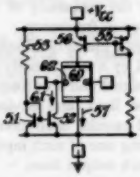
1. Apparatus for measuring a magnetic field produced by a magnetic sample, comprising sensor means for sensing such magnetic field produced by such sample, said sensor means producing a distinguishable output in response to such magnetic field, said sensor means comprising means for producing an analog signal proportionally representative of magnetic flux, motion means for effecting controlled relative movement between said sensor means and such sample for scanning type sensing by said sensor means, output circuit means for integrating such analog signal, and control means for controlling the duration of such integration in relation to such scanning, whereby such integrated analog signal is proportionally representative of the magnetic flux output by such magnetic sample over the extent of such scanning.

4,465,976

HALL ELEMENT WITH BUCKING CURRENT AND MAGNET BIASES

Grant D. Avery, Loudon, and Jacob K. Higgs, Concord, both of N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 26, 1982, Ser. No. 342,687
Int. Cl.³ G01R 33/06; H01L 43/06
U.S. Cl. 324—251 4 Claims



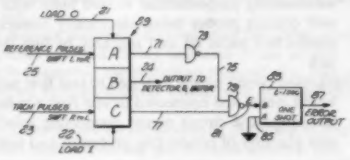
1. A ferromagnetic-material detector comprising a Hall element and a magnet being fixedly mounted therewith to produce a magnet-bias flux through said Hall element for producing a magnet-bias-induced Hall voltage across the output terminals of said Hall element, and a bias current generator means being connected to at least one of said Hall element output terminals to cancel at least a portion of said magnetic-bias-induced voltage, said detector further comprising two energizing terminals through which an energizing current maybe introduced into the body of said Hall element from a DC power supply, said bias current generator being comprised of a current-mirror circuit that is connected between said at least one Hall element output terminal and one of said DC energizing terminals.

4,465,977

ERRONEOUS PULSE SEQUENCE DETECTOR

Eduardo A. Lopez de Romana, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 4, 1982, Ser. No. 385,171
Int. Cl.³ H03K 5/19
U.S. Cl. 328—120 8 Claims



5. A pulse drop-out detector for detecting the absence or addition of a pulse in either of first and second pulse trains, the pulses of the first pulse train alternating, in time, with the pulses of the second pulse train, comprising:

a three-stage shift register capable of shifting bidirectionally;

means for loading a 0 into the first stage of said shift register;

means for loading a 1 into the third stage of said shift register;

means for shifting the 0 loaded into said first stage toward said third stage with said first pulse train;

means for shifting the 1 loaded into said third stage toward said first stage with said second pulse train; and

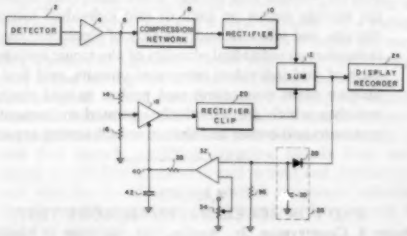
means for detecting the presence of like outputs from said first and third stages, and for generating an output error signal when like outputs from said first and third stages are detected.

4,465,978

SIGNAL CONDITIONING CIRCUIT

Paul M. Helmstetter, Littleton, Colo., assignor to Biosound, Inc., Indianapolis, Ind.

Continuation of Ser. No. 242,967, Mar. 12, 1981, abandoned.
This application Jun. 27, 1983, Ser. No. 507,879
Int. Cl.³ H03K 5/00
U.S. Cl. 328—168 9 Claims



1. A signal conditioning circuit for compressing a wide dynamic range input signal to a narrower range utilization apparatus while retaining the desired definition of both low and high level portions of said input signal, said circuit comprising:

input means providing said input signal;

a signal compression network having an input connected to said input means to receive said input signal, said compression network having an output which varies in a com-

pressed fashion with said input signal and is of a dynamic range which is a predetermined portion of the dynamic range acceptable by said utilization apparatus;

a non-compression network including a linear signal amplifier having an input also connected to said input means to receive said input signal and having an output which varies in a linear non-compressed fashion with said input signal;

clipping means connected to the output of said linear signal amplifier to eliminate signals representative of low level portions of said input signal, said clipping means having an output which varies in a linear non-compressed fashion with the high level portions of said input signal, and

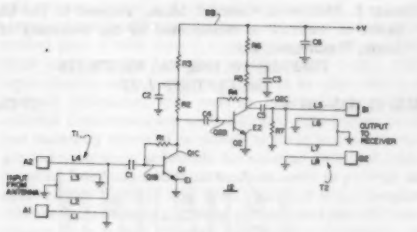
summing means connected to said output of said compression network and said output of said clipping means to superimpose said output of said clipping means onto said output of said compression network to provide a composite output signal for application to said utilization apparatus.

4,465,979

UHF ANTENNA AMPLIFIER HAVING PLANAR TRANSFORMERS

Richard Russo, Parkton, Md., assignor to Fred S. Eichelberger, White Hall, Md., a part interest

Filed Oct. 8, 1982, Ser. No. 433,524
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—66 **15 Claims**



1. An amplifier device for use in the 470-890 MHZ frequency range comprising:

a circuit board having substantially rectangular and coextensive first and second grounding planes on respectively opposed major surfaces thereof;

first and second planar transformer means at opposite ends of said circuit board formed within said first and second grounding planes, respectively;

isolated conductive areas defined in relieved portions of said first grounding plane underlying respective electronic components and constituting external connector means for said components;

plated through hole means in said board for interconnecting said components and said transformer means with selected ones of said grounding planes and said grounding planes with each other;

said first transformer means including first terminal means, for receiving input signals from an external source;

said second transformer means including second terminal means for delivering amplified output signals representative of said input signals to an external device; and

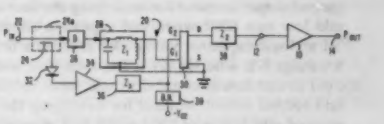
amplifier means comprised of said electronic components interconnecting said first and second transformer means and acting in conjunction therewith to interface the impedance of said external source to the impedance of said external device.

4,465,980

PREDISTORTION CIRCUIT FOR A POWER AMPLIFIER

Ho-Chung Huang, Princeton Junction; Mahesh Kumar, Dayton, and Franco N. Sechi, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,449
Int. Cl.³ H03F *1/32*
U.S. Cl. 330—149 **7 Claims**



1. An RF predistortion circuit for an RF power amplifier which, as a function of the power level of an RF input signal, has non-linear gain and phase shift characteristics for a signal passing therethrough, comprising in combination:

a circuit input terminal to which may be applied an RF input signal of time-varying power;

a dual gate FET including a first gate, a second gate, a drain and source, one of the latter two of which is coupled to said RF amplifier;

an inductive matching network coupled between the circuit input terminal and first gate; and

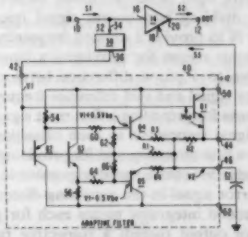
means coupled between the circuit input terminal and second gate for applying to said second gate a signal which is a function of the power level of said input signal for varying the gain through said FET of the RF signal in response to the input signal to compensate for the non-linear gain characteristics of said RF amplifier and wherein the combination of said inductive matching network and signal from the signal applying means varies the phase of the signal passing through said FET to compensate for said phase non-linearity in the RF amplifier.

4,465,981

ADAPTIVE CONTROL SIGNAL FILTER FOR AUDIO SIGNAL EXPANDER

Winthrop S. Pike, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,533
Int. Cl.³ H03G *3/20, 3/42*
U.S. Cl. 330—281 **11 Claims**



1. An adaptive filter for filtering the expansion control signal of an audio signal expander, comprising:

an input terminal for receiving an expansion control voltage, V1, to be filtered, a first output terminal for providing a filtered expansion control signal and a second output terminal for connection to a filter capacitor;

a first resistor coupled between said input terminal and said second output terminal to form a low pass filter in combination with said filter capacitor, said low pass filter having a given time constant, said capacitor developing a voltage,

V2, proportional to current supplied thereto via said first resistor;

analog gate means for coupling the greater, in a given sense, of said capacitor voltage V2 and a further voltage, V3, to said first output terminal, said further voltage being equal to said expansion control voltage V1 less a constant K, wherein K is equal to the base-emitter threshold voltage, Vbe, of a bipolar transistor in said analog gate means;

first circuit means coupled to said input terminal and to said second output terminal for modrfying the time constant of said low pass filter when said expansion control voltage V1 and said capacitor voltage V2 differ in a first sense by a voltage K1, wherein K1 is less than Vbe; and

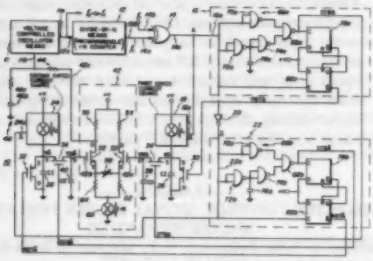
second circuit means coupled to said input terminal and to said second output terminal for modifying the time constant of said low pass filter when said expansion control voltage V1 and said capacitor voltage V2 differ in an opposite sense by a voltage K2, wherein K2 is less than Vbe.

4,465,982

PHASE-LOCKED LOOP WITH REDUCED FREQUENCY MODULATION

George Jernakoff, Albany, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,955
Int. Cl.³ H03L 7/18
U.S. Cl. 331—1 A 14 Claims



1. A phase-locked loop providing an output frequency locked to a multiple N of a reference frequency, comprising:

oscillator means for providing an output signal at a frequency determined by the magnitude of a control voltage at a control input of said oscillator means;

means for dividing said output signal frequency by said multiple N to provide a divided frequency signal;

phase detector means for providing a binary error signal responsive to a phase difference between said divided frequency signal and said reference frequency;

control means for providing a first reset signal and a second strobe signal responsive to each transition of said error signal in a first direction, and for providing a second reset signal and a first strobe signal responsive to each transition of said error signal in the remaining direction;

first and second integrator means each for generating at a respective output thereof a respective ramp waveform each commencing responsive respectively to a respective associated one of said first and second reset signals;

first and second means for sampling the magnitude of said respective ramp waveform from the output of the associated one of said first and second integrator means responsive respectively to a respective one of said first and second strobe signals; and

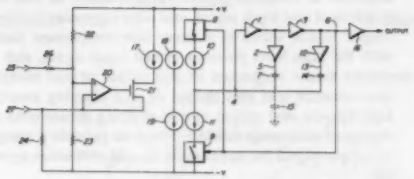
differential amplifier means for providing said control voltage to said oscillator means control input responsive to the difference in said sampled ramp waveform magnitudes provided by said first and second sampling means.

4,465,983

CMOS OSCILLATOR HAVING POSITIVE FEEDBACK CAPACITOR CHARGED AND DISCHARGED WITH CONSTANT CURRENTS

John G. Hogeboom, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 27, 1982, Ser. No. 423,608
Int. Cl.³ H03K 3/03, 3/353
U.S. Cl. 331—111 7 Claims



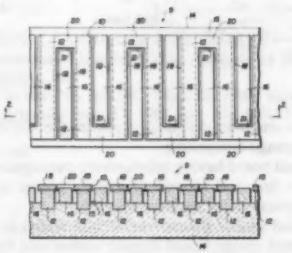
1. An oscillator comprising CMOS amplifying means having an input and first and second outputs, the first output being in phase with the input; a first capacitor coupled between the first output and the input; and two switched constant current means coupled to the input and controlled by the second output for alternately charging and discharging the capacitor.

4,465,984

FREQUENCY SELECTIVE SIDE ABSORBER FOR A MEANDER LINE

Hunter L. McDowell, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1982, Ser. No. 376,315
Int. Cl.³ H01P 1/22
U.S. Cl. 333—81 A 17 Claims



1. A slow wave structure adapted to selectively attenuate predetermined frequencies in the region of the stopband of said structure, comprising in combination:

longitudinal substrate means of dielectric material having an upper conductive surface;

a plurality of spaced parallel support members of dielectric material embedded in and extending above and across the width of said substrate means;

meander line circuit means including an electrical conductor having spaced parallel conductor members extending across said width and located on said support means and having connecting longitudinal members between alternate ends of said conductor members to form a continuous serpentine pattern; and

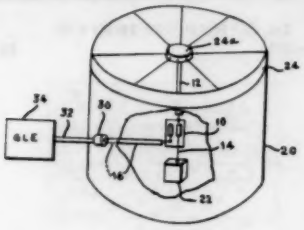
a plurality of separate spaced parallel attenuator members of dielectric material located on said substrate means between pairs of adjacent support members and spaced from said conductor members and support members.

4,465,985

HARDWIRE MISSILE RECEIVER COUPLER

Thomas A. Milligan, Littleton, Colo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 2, 1982, Ser. No. 353,983
Int. Cl.³ H01P 5/18
U.S. Cl. 333—116 5 Claims



1. A hardwire missile receiver coupler apparatus comprising in combination:

a quarter-wavelength coupled pair of transmission lines which comprise a first and second transmission line means, said first transmission line means having a first and second port, said first port to receive the output from an antenna, said second port to provide an input to the receiver terminal, said second transmission line means having a first and second port, said first port being open-circuited toward said antenna side of said transmission line, and,

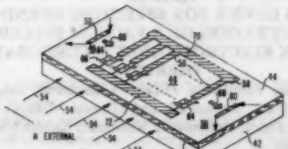
an input coupler cable having one end connected to said second port of said second transmission line means, said input coupler cable having a predetermined length, said input coupler cable being terminated at its other end in a push-on connector, said push-on connector providing external communication access to said first transmission line means by means of an umbilical cable to the external ground equipment, at launch, the external umbilical cable is pulled free from said input coupler cable to provide an open circuit thereto, said open circuited input coupler cable reflects an open circuit to said coupled pair of transmission lines which changes the effective impedance of said first transmission line means.

4,465,986

MAGNETOSTATIC WAVE DEVICE

Koon W. Loh, Pittsburgh, and Peter R. Emtage, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 22, 1982, Ser. No. 443,728
Int. Cl.³ H03H 9/30; H01P 9/00
U.S. Cl. 333—148 20 Claims



1. A magnetostatic wave device comprising:

a layer of magnetic medium having a surface which includes a prespecified area to support the propagation of magnetostatic waves from one end of said prespecified area to another;

a first predetermined pattern of conductive material disposed at said one end of said prespecified area and operative to carry a first electromagnetic signal which generates magnetostatic waves supported by the prespecified area of said magnetic medium at times when said magnetic medium is exposed to an appropriately aligned magnetic field;

a second predetermined pattern of conductive material having a plurality of conductive paths commonly coupled together at both ends, said second pattern of conductive material disposed in juxtaposition with said propagation area of said magnetic medium surface;

means for altering the impedance of said conductive paths of said second pattern in accordance with an applied governing signal to cause a variation in the propagation velocity of said magnetostatic waves generated by said electromagnetic signal of said first conductor; and

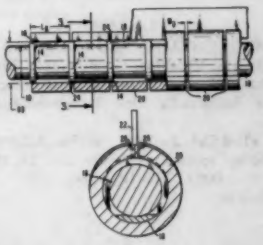
a third predetermined pattern of conductive material disposed at said another end of said prespecified surface area and operative to receive said propagated magnetostatic waves and render a second electromagnetic signal conducted therethrough in response to said received magnetostatic waves.

4,465,987

RING-BAR SLOW WAVE STRUCTURE AND FABRICATION METHOD

Arthur E. Manoly, Rancho Palos Verdes, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 7, 1982, Ser. No. 415,060
Int. Cl.³ H01J 23/27; H01P 9/02
U.S. Cl. 333—156 11 Claims



1. A tubular ring-bar slow wave structure comprising:

a tubular ring-bar slow wave structure comprising a plurality of axially spaced, coaxially aligned, generally parallel metallic rings connected by a plurality of generally axially parallel, alternately spaced metallic bars,

a plurality of axially spaced, coaxially aligned, generally parallel dielectric support rings each of which being positioned atop a corresponding metallic ring, said dielectric ring having a width narrower than the width of each said metallic ring, and

an outer dielectric material support envelope which connects said plurality of dielectric support rings.

4,465,988

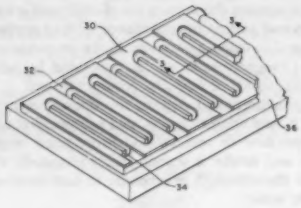
SLOW WAVE CIRCUIT WITH SHAPED DIELECTRIC SUBSTRATE

Robert R. Moats, Mt. Prospect, Ill., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 15, 1982, Ser. No. 441,816
Int. Cl.³ H01P 9/00, 11/00; H01J 25/36, 23/24
U.S. Cl. 333—156 7 Claims

1. In a meander line slow-wave circuit device comprising a planar assembly including a conductive ground plane, a dielectric substrate contiguous with said ground plane and a serpentine meander line conductor having connecting transverse and

longitudual segments disposed on a portion of the upper surface of said substrate, an integral unitary ladder shaped planar dielectric substrate having a plurality of spaced transverse vane segments intersecting a pair of opposing continuous longitudinal vane segments, portions of said longitudinal vane segments between transverse vane segments being exposed when said meander line conductor is disposed thereon, and including a plurality of slot-like openings in the dielectric substrate between adjacent transverse segments of said con-



ductor disposed on said transverse vane segments, the complete lower surface of said intersection longitudinal and transverse vane segments of said substrate being in continuous direct contact with said ground plane;

the improvement comprising a plurality of electrically conductive shields disposed in said slot-like openings between adjacent parallel transverse segments of said meander line conductor and connected to said ground plane to decrease dispersion and increase the bandwidth.

4,465,989

TEMPERATURE-STABILIZED MICROWAVE FILTER

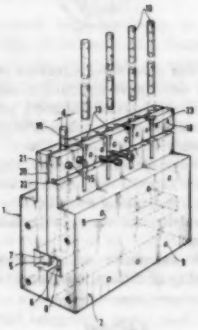
Jean-Pierre Boujet, Chatillon; Gérard Gaille, Bruyères le Chatel, and Charles Jousselin, Draveil, all of France, assignors to Compagnie Industrielle Des Telecommunications, Paris, France

Filed Oct. 20, 1982, Ser. No. 435,446

Claims priority, application France, Oct. 29, 1981, 81 20296

Int. Cl.³ H01P *1/208, 7/06*

U.S. Cl. 333—209 **5 Claims**



1. A microwave filter comprising; a filter body, resonant cavities machined into said filter body and coupled to one another, a respective tuning rod for each of said cavities fabricated from a thermally stable material and having a first end extending into the respective cavity without touching the surface thereof, bores in said filter body which open onto one of its surfaces and into one of said cavities, end portions of said bores opposite said cavities having a diameter substantially equal to the diameter of said tuning rods, and means for clamping a second end of each of said rods into said end portion of said bore accommodating it under substantially constant clamping pressure irrespective of temperature variation.

4,465,990

MICROWAVE DETECTOR ARRANGEMENT

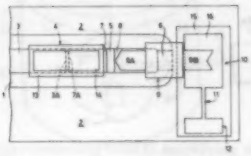
Peter J. Gibson, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

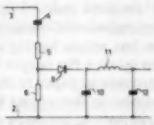
Filed Oct. 13, 1981, Ser. No. 310,670

Claims priority, application United Kingdom, Oct. 20, 1980, 8033796

Int. Cl.³ H01P *5/00;* **H03D** *9/02*

U.S. Cl. 333—247 **13 Claims**





1. A microwave detector arrangement including a detector diode for detecting microwave energy in a portion of transmission line having a characteristic impedance Z_o, at frequencies in a broad band including the series resonant frequency f_o of the diode, said arrangement including a terminating network electrically-connected to the transmission line and comprising a plurality of impedances including:

a. a first resistance having a magnitude substantially smaller than Z_o; and

b. a parallel combination comprising the diode and a second resistance, said combination being electrically-connected in series with the first resistance;

the first and second resistances having magnitudes such that, over said broad band of frequencies, the sum of the first resistance and the impedance of the parallel combination substantially matches that of the characteristic impedance Z_o, the magnitude of the second resistance being sufficiently large to enable effective operation of the diode as a current detector at f_o and at frequencies near f_o, and as a voltage detector at frequencies substantially different from f_o.

4,465,991

OPERATING DEVICE FOR EFFECTING OPENING AND CLOSING OPERATION OF A VACUUM INTERRUPTER WITH AN ELECTROMAGNET INCORPORATED THEREIN

Shinzo Sakuma, Yokohama; Hifumi Yanagisawa, Sagamihara; Kazuo Tokuhata, Yamanishi, and Hiroshi Miyagawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Division of Ser. No. 215,855, Dec. 12, 1980, Pat. No. 4,429,197.

This application Apr. 8, 1983, Ser. No. 483,157

Claims priority, application Japan, Dec. 15, 1979, 54-163851

Int. Cl.³ H01H *45/06*

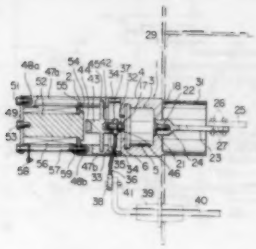
U.S. Cl. 335—151 **2 Claims**

1. An operating device for effecting opening and closing operation of a vacuum interrupter with an electromagnet incorporated therein comprising:

(a) a supporting resin block (4) for supporting a vacuum

interrupter, wherein the vacuum interrupter is constituted so that separable electrical contacts are provided within a vacuum vessel through a pair of contact rods so that one is in contact with the other or away therefrom,

(b) a first pair of poles (47*a*) and a second pairs of poles (47*b*) extending along the outer circumferential surface of said supporting resin block (4), the length of said first pair of poles being longer than that of said second pair of poles, said poles constituting each of said pairs having a diagonal relationship about said block,



(c) a mounting plate (49) of magnetic material directly connected to said first pair of poles (47*a*) and connected to said second pair of poles (47*b*) through connecting rod means (57), and

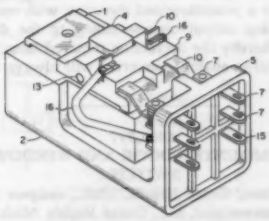
(d) an electromagnet comprising an iron core (52) and a winding (56) wounded thereon fastened to said mounting plate (49), supported by said first and second pairs of poles and connecting rod means (57), whereby a magnetic path is defined by said iron core (52), said mounting plate (49), and said connecting rod means (57).

4,465,992

DOUBLE-POLE DOUBLE-THROW PROXIMITY SWITCH

Gerald L. Fowler, Louisville, Ky., assignor to General Equipment & Mfg. Co., Inc., Louisville, Ky.

Filed May 24, 1982, Ser. No. 381,180
Int. Cl.³ H01H *36/00*
U.S. Cl. 335—205 **1 Claim**



1. In a magnetically actuated double-pole proximity switch, in combination,

a magnet assembly that comprises a magnet that is magnetized transversely of its length, a set of spaced apart fixed contacts mounted in the assembly adjacent an end of the magnet, and a pedestal extending from a face of the magnet, said pedestal having a transverse hole,

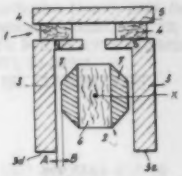
and an armature assembly pivotally mounted on the magnet assembly, said armature assembly comprising an armature that extends generally parallel to the magnet and that has a centrally located hole in which said pedestal is loosely received, a pivot pin that is fixed to the armature and is loosely received in the hole in the pedestal, and a pair of spaced apart contacts mounted on and insulated from the armature and that cooperate with the fixed contacts and pivot pin to position the armature in the field of the magnet.

4,465,993

MAGNETIC HOLDER

Philibert M. Braillon, Montmelian, France, assignor to Braillon & Cie, Montmelian, France

Filed Mar. 23, 1983, Ser. No. 478,078
Claims priority, application France, Mar. 25, 1982, 82 05681
Int. Cl.³ H01F *7/20*
U.S. Cl. 335—287 **10 Claims**



1. A magnetic holder adapted to retain a magnetically attractable article, comprising:

a stator provided with a pair of pole pieces and having first permanent magnet means defining a first magnetic mass proportional to the field strength generated by said first permanent magnet means;

a rotor having second permanent magnet means defining a second magnetic mass contributing magnetic force to said pole pieces in one angular position of said rotor and cancelling magnetic force from said first permanent magnet means in a second angular position of said rotor, said second magnetic mass being greater than said first magnetic mass; and

means for mounting said rotor in said stator for angular displacement between said positions with play defining an air gap causing magnetic field losses in the contribution of said second magnetic means to the magnetic force at said pole pieces, said play being dimensioned to contribute magnetic losses corresponding substantially exactly to the excess of the magnetic mass of said second permanent magnet means over the magnetic mass of said first permanent magnet means, said first magnetic mass M, said second magnetic mass M1 and said magnetic losses P being related by the relationship:

in the first mentioned position of said rotor: $M+(M-P)=2M$, and

in the second of said positions: $M-(M1-P)=0$.

4,465,994

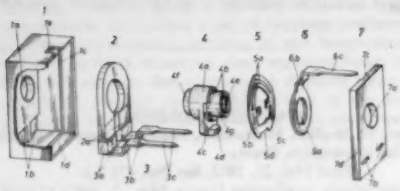
ADJUSTABLE ENCLOSED POTENTIOMETER

Tomaz Rehberger, Sentjernej, Yugoslavia, assignor to Iskra-Sozd Elektrokovinske Industrije n.sol.o, Ljubljana, Yugoslavia

Filed Mar. 29, 1982, Ser. No. 362,657
Claims priority, application Yugoslavia, Mar. 30, 1981, 835/81; Mar. 4, 1982, 479/82
Int. Cl.³ H01C *10/32*
U.S. Cl. 338—164 **20 Claims**

1. An adjustable enclosed potentiometer, characterized in that into a housing, a sliding ring with contacts is inserted and an axle is pivoted in an opening of said housing, said axle extending through a wiper and a connector, the housing being

closed with a cover and, said axle having two pivoting narrow parts and a thickened part, said thickened part having two



symmetrical side notches, a seat, two notches and a slot, said slot positioned between said notches.

4,465,995

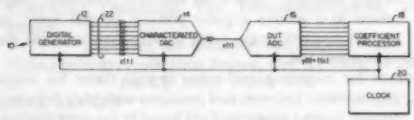
METHOD AND APPARATUS FOR ANALYZING AN ANALOG-TO-DIGITAL CONVERTER WITH A NONIDEAL DIGITAL-TO-ANALOG CONVERTER

Edwin A. Sloane, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corp., San Jose, Calif.

Continuation-in-part of Ser. No. 264,928, May 18, 1981, Pat. No. 4,335,373, which is a continuation-in-part of Ser. No. 204,979, Nov. 7, 1980, Pat. No. 4,419,656. This application Apr. 1, 1982, Ser. No. 364,374

Int. Cl.³ H03K *13/00*

U.S. Cl. 340—347 CC **10 Claims**



1. A method for calibrating an analog-to-digital converter (ADC) comprising the steps of:

exciting a plurality of inputs of a digital-to-analog converter (DAC) from an excitation means generating known digital excitation signals, each said excitation signal being applied at a single digital bit input of the DAC and each said excitation signal being binary and orthogonal with respect to all other ones of said plurality of excitation signals, the sum of said excitation signals constituting a maximum extropy sequence of substantially uniform amplitude probability, said DAC producing an analog output signal, the transfer function of said DAC having been characterized by premeasured bit weighting values;

providing said analog output signal of the DAC to an analog input of the analog-to-digital converter (ADC) under test, said ADC producing digital output signals;

transforming said digital output signals from time domain digital signals into binary transform domain digital signals to obtain an output response weighting coefficient for each bit of the converter under test; and

correcting each said output response weighting coefficient for bias errors induced by said DAC by multiplying each output response weighting coefficient by the reciprocal of each corresponding said premeasured bit weighting values in a bias correction means in order to obtain unbiased weighting values of each bit specifying the transfer characteristic of the ADC under test.

4,465,996

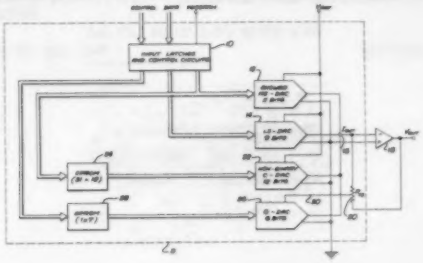
HIGH ACCURACY DIGITAL-TO-ANALOG CONVERTER

Ziya G. Boyacigiller, Hayward; James L. Brubaker, San Jose, and Jerome C. Zis, Cupertino, all of Calif., assignors to Intersil, Inc., Cupertino, Calif.

Continuation of Ser. No. 240,073, Mar. 3, 1981, abandoned. This application May 24, 1982, Ser. No. 381,386

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **12 Claims**



1. A high accuracy digital-to-analog converter for converting a digital input signal to an equivalent analog output signal, comprising:

a primary digital-to-analog converter for receiving the digital input signal and providing a corresponding first analog signal;

a programmable memory for receiving an address which corresponds to the digital input signal and providing a digital correction output signal;

a correction digital-to-analog converter for receiving the digital correction signal from the memory and providing a corresponding second analog signal which is added to the first analog signal from the primary digital-to-analog converter to provide a final analog output signal, said correction digital-to-analog converter increasing the accuracy of the conversion of the digital input signal, wherein said correction digital-to-analog converter employs a nonbinary series in which the value of each term above some specific term is less than the sume of the values of all preceding terms in the series, thereby eleiminating gaps in the output range of the correction digital-to-analog converter, and wherein the primary digital-to-analog converter is configured so that the first anlog signal will be skewed in a predetermined direction with respect to the ideal analog output corresponding to the digital input signal, whereby the correction required from the correction digital-to-analog converter will always be a single direction.

4,465,997

EXTERIOR MOUNTED DOOR AND WINDOW ALARM SWITCH

Thomas N. Hines, Grand Rapids, Mich., assignor to Security Network International, Inc., Grand Rapids, Mich.

Filed Jan. 26, 1981, Ser. No. 228,153

Int. Cl.³ G08B *13/08*

U.S. Cl. 340—542 **12 Claims**

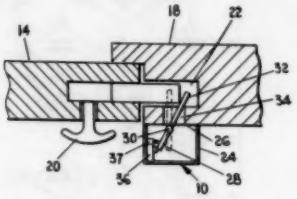
1. An electrical alarm switch for a door or window or the like wherein the door or window is locked in its closed position by a dead bolt or latch that engages a recess or opening in a door or window frame or adjacent door or window, the switch changing its electrical state when the dead bolt or latch is opened, the switch comprising:

a casing adapted to be mounted on the door or window or door or window frame the casing having a hollow interior portion;

an electrical contact assembly mounted in the casing, the contact assembly having a contact housing with an open interior and movable electrical contacts mounted therein,

a movable actuator bar extending therefrom and positioned so as to change the open or closed state of the electrical contacts on movement of the actuator bar, the contacts being connected to terminals that protrude from the housing, the terminals extending through openings in the casing;

a terminal assembly mounted over the terminal openings in the casing, the terminal assembly having separate electrical contacts that engage each of the terminals of the contacts and having means for electrically connecting separate electrical leads from an alarm system to each contact;



a removable cover mounted over the casing so as to cover and conceal the terminal assembly;

a contact assembly actuating means movably mounted in the casing for engaging the actuator bar so as to change the electrical state of the contact assembly, the contact assembly actuating means being mounted and positioned such that a portion of the contact assembly actuating means engages the latch or dead bolt when it is closed, such engagement moving the contact assembly actuating means and changing the electrical state of the contact assembly, the contact assembly actuating means being biased to move back to its previous position when the dead bolt or latch is opened.

4,465,998

BURGLAR-PROOF BARRIER

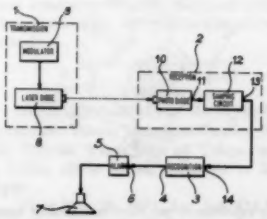
Pierre Durand, Clamart, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 7, 1981, Ser. No. 309,417

Claims priority, application France, Oct. 13, 1980, 80 21825

Int. Cl.³ G08B *13/18*

U.S. Cl. 340—557 **8 Claims**



1. A burglar-proof barrier providing protection against intrusions, comprising means for the transmission of signals modulated and coded by pulses in a predetermined code, means for the reception of the modulated and coded signals transmitted and means for recognising the predetermined code in the signals received, said recognition means supplying at an output a characteristic signal whenever the code is recognized, an alarm circuit whose input is connected to the output of the code recognition means and which supplies an alarm signal when the characteristic signal is absent, the code recognition means being constituted by a system of detecting pulses by coincidences and the modulated coded signals forming repeat pulse trains, wherein the system for the detection of pulses by coincidences comprises means for delaying, as from the first pulse in each train, all the pulses preceding the final pulse in the train in such a way as to bring them into coincidence with the latter, and a logic gate circuit for controlling these coincidences and which supplies the characteristic signal to an output forming the output of the detection system.

4,465,999

MATRIX DRIVING METHOD FOR ELECTRO-OPTICAL DISPLAY DEVICE

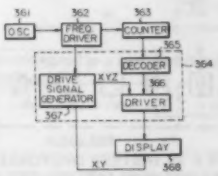
Akira Tsuzuki, Tokyo; Hiro Fujita, Sayama, and Shigeru Morokawa, Higashiyamato, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 805,061, Jun. 9, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,805

Claims priority, application Japan, Jun. 15, 1976, 51-69363; Jul. 22, 1976, 51-87676; Feb. 18, 1977, 52-16824; Feb. 18, 1977, 52-16825; Apr. 30, 1977, 52-50583

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—784 **5 Claims**



1. A method of cyclically driving an electrooptical display device including row and column and electrodes arranged in a matrix array to provide display elements at intersections between said row and column electrodes, comprising the steps of:

applying row drive signals to said row electrodes, respectively, during a half cycle period equally divided into prescribed time intervals, each of said row drive signals taking a plurality voltage potentials during said half cycle period and one of said row drive signals taking a voltage potential different from those of the other of said row drive signals during more than one of said prescribed time intervals; and

applying first, second and third column drive signals to each of said column electrodes during said half cycle period, with said first column drive signal inducing a non-display state at the display elements along said each column electrode, and said second column electrode inducing a non-display state at the display element along said each column electrode across one of said row electrodes and inducing a display state at the display elements along said each column electrode across the other of said row electrodes,

wherein said first column drive signal takes a reference voltage potential equal to the mean value of the voltage potentials of said row drive signals during the prescribed time intervals of said half cycle period, and said second column drive signal takes a voltage potential nearly equal to a value C given by

$$C = r_0 - A \sum_{i}^{E_{on}} (r_i - r_0)$$

$$r_0 = \left(\sum_{i}^{n} r_i \right) / n$$

$$A = 2/(n-1)$$

where

ro=the mean value of the voltage potentials of said row drive signals,

ri=the voltage potential of the row drive signal to be applied to i-th row electrode, during a given time interval, on which display element is in the display state,

n=the number of the display elements of said each column electrode,

l=the number of turned on display elements along said each column electrode.

4,466,000

DATA COMMUNICATION SYSTEM

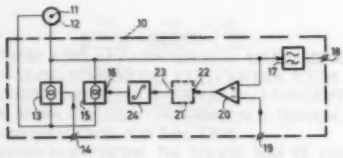
Gerardus L. M. Jansen, and Gerardus J. J. Vos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,733

Claims priority, application Netherlands, Feb. 26, 1981, 8100930

Int. Cl.³ H04Q *9/00*; H04J *1/06*

U.S. Cl. 340—825.5 **13 Claims**



1. A data communication system comprising a plurality of data stations which are interconnected by a common communication medium, each data station comprising a data transmitter for transmitting a data signal via the communication medium and further comprising a data receiver for receiving a signal transmitted by one of the other data stations via the communication medium, and each data station comprising arbitration means to prevent more than one data transmitter transmitting simultaneously via the communication medium, characterized in that the arbitration means in each data station comprise an arbitration transmitter for transmitting an arbitration signal via the communication medium, that the arbitration means further comprise an arbitration receiver for receiving an arbitration signal transmitted by one or more of the arbitration transmitters of other data stations via the communication medium, and that the arbitration transmitters and receivers utilize an arbitration frequency band which is separated from the frequency band of the data transmitters and receivers.

4,466,001

POLLING SYSTEM FOR MULTIPLE TERMINAL UNITS

Morris A. Moore, North Lauderdale, and William V. Braun, Pompano Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1981, Ser. No. 327,310

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.08 **5 Claims**

1. A polling method for a two-way communication system having a base station and a multiplicity of terminal units, each unit having a unique address code and the capability of detecting the respective address code and a reference address code, each terminal unit including an internal timer, and comprising the steps of:

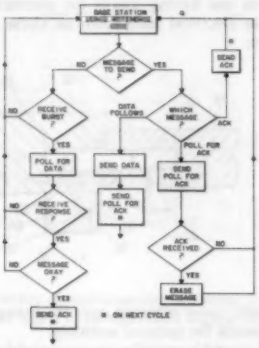
establishing a permanent queue of assigned time slots for terminal responses;

transmitting the reference address code base-to-terminal, with the time slot sequence following closely upon the reference code;

each terminal detecting the reference address code and, in response thereto, setting the respective timer to enable terminal transmission in the respective assigned time slot;

each terminal having stored data to transmit to the base station transmitting a responsive signal in the respective assigned time slot;

the base station keeping a record of terminals responding in the time slots;



subsequent to the time slots, the base station transmitting in sequence the respective address codes of those terminals responding in the time slots; and

each terminal, upon detecting the respective address code, transmitting said address code followed by the stored data.

4,466,002

VARIABLE RELUCTANCE POSITION TRANSDUCER

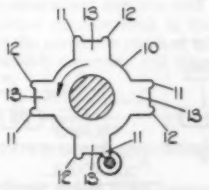
William F. Hill, Stafford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 17, 1982, Ser. No. 349,470

Claims priority, application United Kingdom, Feb. 18, 1981, 8105148

Int. Cl.³ G08G *19/06, 19/12*; G01B *7/14*

U.S. Cl. 340—870.31 **10 Claims**



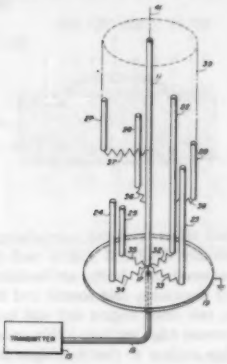
1. A variable reluctance position transducer comprising a source of magnetic flux, a winding linked with said source in a magnetic circuit which includes a pole piece and a relatively movable part, said relatively movable part having a surface, at least one pair of protuberances on said surface spaced apart in the direction of movement of the relatively movable part, and a web of height less than that of the protuberances interconnecting the protuberances, and a discriminating circuit to which said winding is connected, said discriminating circuit including integrating means to which the output of the winding is applied and gating means connected to said integrating means and operating to distinguish between signals produced in the winding when a protuberance passes the pole piece preceded by the web and followed by the web.

4,466,003

COMPACT WIDEBAND MULTIPLE CONDUCTOR MONOPOLE ANTENNA

Richard K. Royce, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,219
Int. Cl.³ H01Q 9/22
U.S. Cl. 343—826 4 Claims



1. In an antenna employed for the transmission of different frequency radio signals and including a first cylindrical conductor of length h_1, the conductor resonating at frequency f_1 for which h_1 is approximately one-quarter of a wavelength, that is, $h_1 \approx \lambda/4$ at f_1;

means for generating a current distribution in the antenna, when the antenna is operated in a band extending from f_1 to 4 f_1, that approximates the current distribution of a monopole whose physical length is approximately one-quarter of a wavelength at all frequencies in the band, said means for generating a current distribution in the antenna including:

a plurality of second cylindrical conductors positioned parallel to and spaced from the first conductor;

the length of each second conductor being one-quarter of a wavelength at a respective frequency in the band; and

a plurality of resistors;

each resistor connecting an end of a respective second conductor to one other conductor;

the second conductor forming balanced two-wire transmission line traps with the conductors to which they are connected.

4,466,004

THERMOMAGNETIC RECORDING

Hiroshi Kobayashi, Tokyo; Motoharu Tanaka, Numazu; Hajime Machida; Takashi Yano, both of Tokyo, and Uee Myong Hwang, Chiba, all of Japan, assignors to Ricoh Company, Ltd., Japan

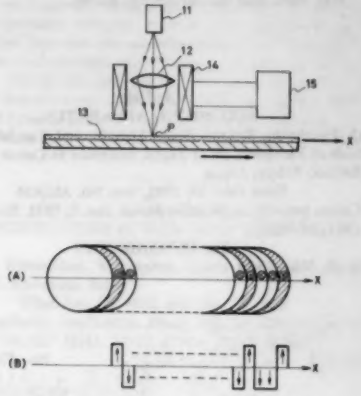
Filed Dec. 28, 1981, Ser. No. 334,545
Claims priority, application Japan, Jan. 5, 1981, 56-234
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.4 11 Claims

11. An apparatus for recording information in a bit form on a magnetic recording medium by locally specifying the direction of magnetization in said medium while cooling down after having been heated to or above its Curie point, comprising:

means for applying a heat spot on the recording surface of said recording medium;

means for causing to move said heat spot along the recording surface of said recording medium; and

means for applying a magnetic field to said recording medium at least partly, said magnetic field application means applying a magnetic field to record information on said recording medium in the form of a partial section of said heat spot as a bit of information where the direction of



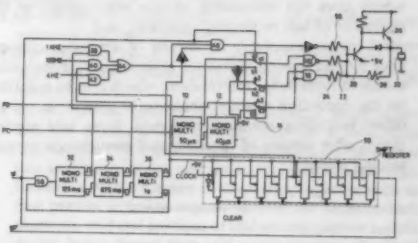
magnetization is orientated in a specified direction by said applied magnetic field.

4,466,005

AIR BUBBLE REMOVING SYSTEM IN A PRINTER HEAD OF AN INK JET SYSTEM PRINTER OF THE INK ON DEMAND TYPE

Hisashi Yoshimura, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1982, Ser. No. 400,930
Claims priority, application Japan, Jul. 27, 1981, 56-118298
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 12 Claims



1. In an ink jet system printer of the ink on demand type which includes a printer head comprising a pressure chamber of which one end is provided with an orifice means for emitting ink droplets therethrough, and the other end is connected to an electro-mechanical transducer for suddenly reducing the volume of said pressure chamber, the improvement comprising:

an air bubble removing system for applying a preselected driving signal to said electro-mechanical transducer so as to discharge air bubbles contained in ink liquid disposed in said pressure chamber through said orifice means including a first control means for applying a driving signal of a first preselected voltage level and having at least two different frequencies in a predetermined cycle to said electro-mechanical transducer;

a second control means for applying a driving signal of a second preselected voltage level and having at least two

different frequencies in a predetermined cycle to said electro-mechanical transducer; and

a third control means for energizing said first control means and, then, said second control means.

4,466,006

RECORDING APPARATUS

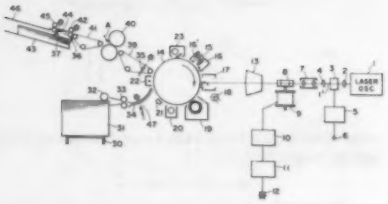
Yuji Takahashi, Tokyo; Hisaji Masaki, and Yasuhito Suzuki, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,454

Claims priority, application Japan, Jan. 8, 1981, 56-1830; Jan. 8, 1981, 56-1831

Int. Cl.³ G01D *15/00*

U.S. Cl. 346—153.1 32 Claims



29. A recording apparatus comprising:

recording means for recording an image on a recording medium at a recording position;

storing means for storing recording media;

means for conveying recording media from said storing means to said recording means along a conveying path;

sensing means disposed at a predetermined position in the conveying path of the recording media from said storing means to a recording position of said recording means, for sensing abnormal conveyance of a recording medium which does not necessarily require interruption of the operation of said recording apparatus; and

control means responsive to sensing of abnormal conveyance by said sensing means for controlling said recording means to form image information, which is to be recorded on the recording medium abnormally conveyed, on another recording medium conveyed from said storing means after sensing of the abnormal conveyance by said sensing means.

4,466,007

HEAT-SENSITIVE RECORDING PAPER

Sukenori Nakamura, and Akira Igarashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 15, 1982, Ser. No. 434,694

Claims priority, application Japan, Oct. 16, 1981, 56-165264

Int. Cl.³ B41M *5/18*

U.S. Cl. 346—200 8 Claims

1. A heat-sensitive recording paper, comprising:

(a) a support base comprising raw paper manufactured with a Yankee machine having a glossy surface; and

(b) a heat-sensitive color-forming layer on the glossy surface, wherein the side of the support base opposite the glossy surface is a rough surface, and wherein the glossy surface has a Bekk smoothness of 70 seconds or more and the rough surface has a Bekk smoothness of from 5 seconds to 30 seconds.

4,466,008

FIELD EFFECT TRANSISTOR

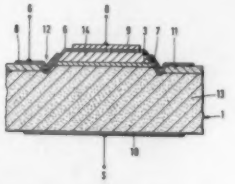
Heinz Beneking, Rolandstrasse 1, D-5100 Aachen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,811

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040873

Int. Cl.³ H01L *29/80, 29/48*

U.S. Cl. 357—22 13 Claims



1. A vertical field effect transistor comprising: a semiconductor body; vertically displaced source and drain regions formed in said semiconductor body; an insulating layer disposed between and separating said source and drain regions; said source region, said drain region and said insulating layer all extend to a common edge surface; a thin conductive layer formed on said edge surface so that it bridges said insulating layer, and directly contacts the edge surface of said source and drain regions; a rectifying metal/semiconductor gate contact on said thin conductive semiconductor layer; a drain contact for said drain region; and a source contact for said source region.

4,466,009

LIGHT-ACTIVATED SEMICONDUCTOR DEVICE WITH OPTIC FIBER MOVEABLE AZIMUTHALLY AND TRANSVERSELY

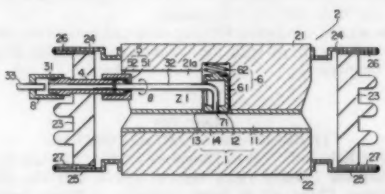
Nobutake Konishi, Hitachiota; Mutsuhiro Mori, and Tomoyuki Tanaka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1981, Ser. No. 322,698

Claims priority, application Japan, Nov. 21, 1980, 55-163350

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 17 Claims



1. A light-activated semiconductor device comprising:

a light-activated semiconductor element having a predetermined junction structure formed therein and a light receiving surface provided at a part of its surface;

a package for hermetically accommodating said light-activated semiconductor element;

a first optical guide portion of inorganic material which passes through said package and is hermetically secured thereto; and

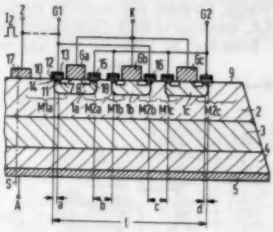
a second optical guide portion of inorganic material which is disposed within said package and has one end thereof coupled in a mechanically flexible relation with one end of said first optical guide portion within said package and the other end thereof made in contact with said light receiving surface of said light-activated semiconductor element.

4,466,010

THYRISTOR WITH ENHANCEMENT AND DEPLETION MODE FET CONTROL FOR IMPROVED SWITCH BEHAVIOR AND METHOD OF USING SAME

Hubert Patalong, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 8, 1982, Ser. No. 366,559
Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118293
Int. Cl.³ H01L 29/78
U.S. Cl. 357—38 2 Claims



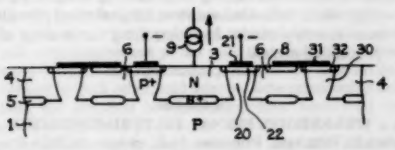
1. A thyristor comprising a semiconductor body which exhibits an n-emitter contacted by a cathode electrode with an adjacent p-base layer and a p-emitter contacted by an anode electrode with an adjacent n-base layer, a plurality of controllable emitter short-circuits designed as MIS structures disposed at a boundary surface of the semiconductor body, said emitter short-circuits each including a first semiconductor region of a first conductivity type connected to one of said electrodes, a second semiconductor region of the first conductivity type connected to a base layer, and a third semiconductor area lying between said semiconductor regions and being covered by a gate electrically insulated from the semiconductor body, a first part of the MIS structures being of the depletion type and a second part of the MIS structures being of the enhancement type, a first common control terminal connected to the gates of the MIS structures of the one type, a second common control terminal connected to the gates of the MIS structures of the other type, one of said emitters including a plurality of emitter regions, and said first and second parts of the MIS structures together taking up between 10% and 80% of the total cross-sectional surface taken up by all of said emitter regions.

4,466,011

DEVICE FOR PROTECTION AGAINST LEAKAGE CURRENTS IN INTEGRATED CIRCUITS

Francois Van Zanten, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 13, 1981, Ser. No. 263,203
Claims priority, application France, May 14, 1980, 80 10842
Int. Cl.³ H01L 27/04
U.S. Cl. 357—48 9 Claims



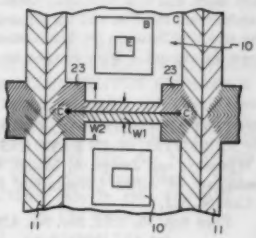
1. A device for protection against leakage currents in monolithic integrated circuits supplied by a supply voltage with a reference potential, having a semiconductor substrate of a first type of conductivity, coated by a layer of the second type of conductivity in which various elementary components are formed in islands insulated from each other by isolation walls of the first type of conductivity, which are connected to the substrate, with one of the said islands (parasitic island) being subject to parasitic voltages of the polarity adapted to render the junction between the parasitic island and the substrate conductive, said parasitic island being surrounded by an annular island, wherein the isolation wall of the parasitic island has a contact thereon connected to the reference supply voltage, while said annular island is electrically connected to its outer isolation wall, said contact being spaced from said annular island.

4,466,012

SEMICONDUCTOR DEVICE WITH DEEP OXIDE ISOLATION

Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 25, 1982, Ser. No. 392,348
Claims priority, application Japan, Jun. 26, 1981, 56-98378
Int. Cl.³ H01L 27/12, 27/04, 29/34, 29/06
U.S. Cl. 357—49 12 Claims



1. A semiconductor device having a plurality of semiconductor elements, comprising:

a substrate;

an epitaxial layer formed on said substrate;

a buried layer of high conductivity, formed inside both said substrate and said epitaxial layer;

a first passive isolation region formed parallel to said buried layer through said epitaxial layer and penetrating into said substrate;

a second passive isolation region, having a center portion and end portions, formed perpendicular to said buried layer and said first passive isolation region and penetrating into said buried layer, said second passive isolation region formed in such a manner as to enclose, together with said first passive isolation region, each of the semiconductor elements, said end portions of said second passive isolation region being deeper than said center portion of said second passive isolation region.

4,466,013

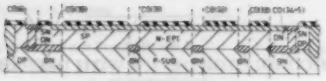
TAPPED INTEGRATED RESISTOR

Rudy J. van de Plassche, Sunnyvale, Calif., and Else C. Dijkmans, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 22, 1983, Ser. No. 525,350
Claims priority, application Netherlands, Aug. 25, 1982, 8203323
Int. Cl.³ H01L 27/02
U.S. Cl. 357—51 1 Claim

1. An integrated resistor having a substrate of a first conductivity type, a layer of a semiconductor material of a second, opposite conductivity type deposited epitaxially on said substrate, a region of the first conductivity type provided in said epitaxial layer, which region contains the resistance element of the integrated resistor and comprises a first and a second end

each contacted by a conductive layer and at least one tapping area which is also contacted by a conductive layer, the resistance element extending between the first and the second end, the tapping area being situated between the first and the second end from an electrical point of view, and a first contact connected to said epitaxial layer and disposed outside said region near the first end, characterized by a second contact connected to said epitaxial layer and disposed adjacent said region near the second end, means for electrically coupling, at least for signal current, the first contact to the first end and the second



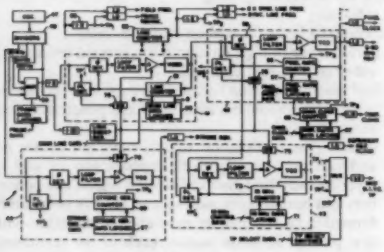
contact to the second end, a first buried layer which extends from beneath the first contact to beneath the first end, a second buried layer which extends from beneath the second contact to beneath the second end, and at least one further buried layer which extends underneath the tapping area, said buried layers being of the second conductivity type, being situated at least partly in the epitaxial layer and being more conductive than the epitaxial layer, and thus serving to short-circuit the epitaxial layer underneath the first and the second end, underneath the tapping area, and between the first contact and the first end and between the second contact and the second end.

4,466,014

VIDEO TEST METHOD AND APPARATUS WITH INCREMENTAL SCAN RATE CAPABILITY

Barry F. Wilensky, and Joseph A. Maggi, both of Brooklyn, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1982, Ser. No. 429,884
Int. Cl.³ H04N 9/62
U.S. Cl. 358—10 **25 Claims**



1. Video test apparatus controlled by a synchronous generator and having incremental scan capability characterized by:

(a) means to provide an oscillating reference signal;

(b) a scan line generator connected to the oscillating reference signal means for generating a scan line frequency in response to the oscillating reference signal;

(c) first time base adjustment means connected to the scan line generator for adjusting the scan line frequency in increments of one line for varying the scan characteristics of the system;

(d) a pixel clock connected to the scan line generator for receiving the scan line frequency;

(e) second time base adjustment means for adjusting the pixel clock in increments of one pixel for varying the scan characteristics of the system;

(f) means connected to one of the pixel clock and the scan line generator for obtaining a signal at the scan line frequency;

(g) a reference frequency generator connected to the signal obtaining means to provide a reference frequency depending upon the scan line frequency, said dependent reference frequency being an integer multiple of the scan line frequency, the dependent reference frequency being provided in successive groups of said multiple, the groups being at a substantially constant phase relationship with the scan line frequency; and

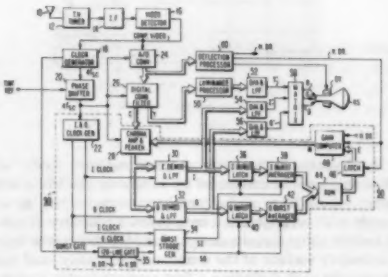
(h) the dependent reference frequency being applied to the synchronous generator.

4,466,015

AUTOMATIC COLOR BURST MAGNITUDE CONTROL FOR A DIGITAL TELEVISION RECEIVER

Robert A. Wargo, Ringoes, and Stuart S. Perlman, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 428,591
Int. Cl.³ H04N 9/535
U.S. Cl. 358—27 **15 Claims**



1. In a television receiver including a source of digital chroma signals having a chroma reference burst component, a digital chroma gain control apparatus comprising:

processing means responsive to a digital chroma control signal for scaling the magnitude of said digital chroma signals;

sampling means responsive to the chroma reference burst component of said digital chroma signals for producing first and second digital chroma reference signals, said second digital chroma reference signal being produced in predetermined phase relationship to said first digital chroma reference signal;

memory means having a plurality of addressable registers for storing digital words therein, the digital word stored in each addressable register being indicative of whether first and second portions of the address of said register correspond to values at points in said predetermined phase relationship on a sinusoid of predetermined magnitude;

means for applying said first and second digital chroma reference signals to said memory means as the first and second portions of the address of said addressable registers thereof to cause said memory means to provide the digital word stored in said addressed register;

control means developing said chroma control signal in response to the addressed stored digital word provided by said memory means for controlling the scaling of said processing means.

4,466,016

TELEVISION SIGNAL FILTERING SYSTEM

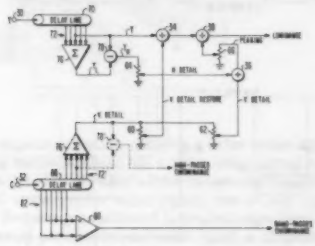
Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1981, Ser. No. 267,634
Int. Cl.³ H04N 9/535
U.S. Cl. 358—31 **12 Claims**

1. In a television receiver, including a source of composite video information signals comprising luminance signal compo-

nents occupying a given band of frequencies and chrominance signal components interleaved with said luminance signal components over a high frequency portion of said given band of frequencies; apparatus comprising:

a delay line having an input coupled to receive said video information signals and including a plurality of serially coupled signal transfer stages through which said video information signals are sequentially transferred, said delay line including, in cascade arrangement, a first group of sequential delay stages having output taps at which output signals exhibiting differing delays with respect to said input signals appear, an intermediate group of sequential delay stages and a second group of sequential delay stages having output taps, wherein respective ones of said signals at said output taps of said second group exhibit delays substantially equal to the duration of an integer multiple of one horizontal television



signal line with respect to respective ones of said signals at said output taps of said first group of stages;

means for weighting and combining the signals appearing at said output taps of said first group of stages to produce a first transversal filter exhibiting at an output an output response having a first predetermined transversal filter response characteristic;

means for weighting and combining the signals appearing at said output taps of said second group of stages to produce a second transversal filter exhibiting at an output an output response having a second predetermined transversal filter response characteristic; and

means having inputs coupled to the outputs of said first and second transversal filters for combining the signals produced thereat to produce a comb filtered signals occupying a portion of said given band of frequencies.

4,466,017

SYNC SUPPRESSION SCRAMBLING OF TELEVISION SIGNALS FOR SUBSCRIPTION TV

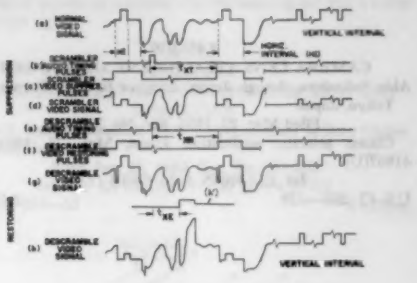
Robert O. Banker, Cumming, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Dec. 23, 1981, Ser. No. 334,040

Int. Cl.³ H04N 7/16; H04K 1/04

U.S. Cl. 358—120 **40 Claims**

1. The method of sync suppression scrambling of TV signals having video signals with horizontal and vertical sync pulses and audio signals for subscription TV programs which comprises the steps of generating sync suppression pulses in overlapping time relationship with at least the horizontal sync pulses, generating timing pulses in selected time relationship with said sync suppression pulses such that each of said timing pulses and each of said suppression pulses have a selected delay with respect to each other, said selected time relationship being less than the duration between successive horizontal sync pulses selected from a plurality of different delays and a dynamically variable delay, suppressing in amplitude said horizontal sync pulses with said suppression pulses to scramble said TV signals, modulating said audio signals with said timing pulses to encode said TV signals, transmitting said scrambled and encoded TV signals from a transmitting station to receiving stations, deriving said timing pulses at said receiving stations, delaying said derived timing pulses with said selected delay to provide delayed timing pulses, generating restoring pulses in overlapping time relationship with said horizontal sync pulses upon occurrence of said delayed timing pulses, and



restoring said horizontal sync pulses in amplitude with said restoring pulses to descramble said TV signals at those of said receiving stations which are authorized to receive subscription TV.

4,466,018

IMAGE PICKUP APPARATUS WITH GAIN CONTROLLED OUTPUT AMPLIFIER

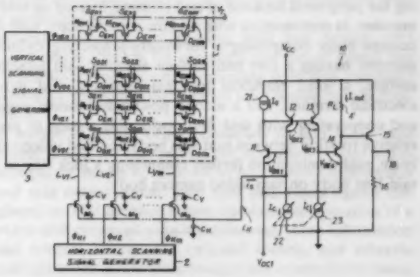
Mitsuo Soneda; Takashi Noguchi, and Takaji Ohtsu, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 375,109, May 5, 1982. This application May 19, 1982, Ser. No. 379,959

Claims priority, application Japan, May 9, 1981, 56-69786; May 20, 1981, 56-74809; May 20, 1981, 56-78810

Int. Cl.³ H04N 5/14

U.S. Cl. 358—213 **23 Claims**



1. Image pickup apparatus comprising a plurality of picture element units each formed of a photosensitive member generating a quantum of electrical charge depending on the amount of light falling thereon, and an electrically controlled gating circuit for transmitting the generated amount of charge in response to scanning pulses applied thereto, said picture element units being disposed in a two-dimensional array of horizontal rows and vertical columns; scanning circuit means for sequentially providing said scanning pulses to the gating circuits of the respective picture element units; and output circuit means coupled to receive the electrical charges in sequence from said picture element units to produce a video signal, wherein said output circuit means includes a gain-controlled current amplifier having a signal input receiving said electrical charges as an input signal current, an output providing an amplified output signal current whose strength is related to that of the input signal current by a current current gain of the gain-controlled current amplifier, and a controllable element

for selectively adjusting said gain in accordance with a control signal applied thereto.

4,466,019

CAMERA LENS ATTACHMENT MECHANISM

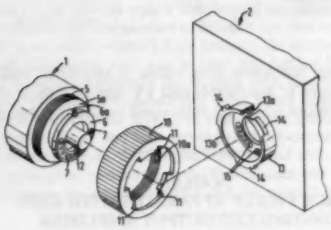
Akio Sakashita, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 360,931

Claims priority, application Japan, Mar. 25, 1981, 56-41967[U]

Int. Cl.³ H04N *5/26*; G03B *17/14*

U.S. Cl. 358—229 **2 Claims**



1. A lens apparatus comprising a generally cylindrical lens body having a rear end portion, an attachment surface formed at said rear end portion of said lens body and serving as a flange back reference surface, a base member projecting in the rearward direction from said attachment surface, a movable electrical terminal provided on said base member and biased in the rearward direction, and a first positioning means for establishing the peripheral location of said terminal formed on said base member, in combination with a video camera body, said video camera body comprising a forwardly-projecting cylindrical member having a free end surface abutting said attachment surface, a fixed electrical terminal engaging said movable electrical terminal, and a second positioning means engaging and cooperating with said first positioning means to prevent relative rotation between said lens body and said video camera body, said combination further comprising a lock ring to hold said lens body on said video camera body.

4,466,020

INTEGRATED IMAGING BAR

Patrick A. O'Connell, Fremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

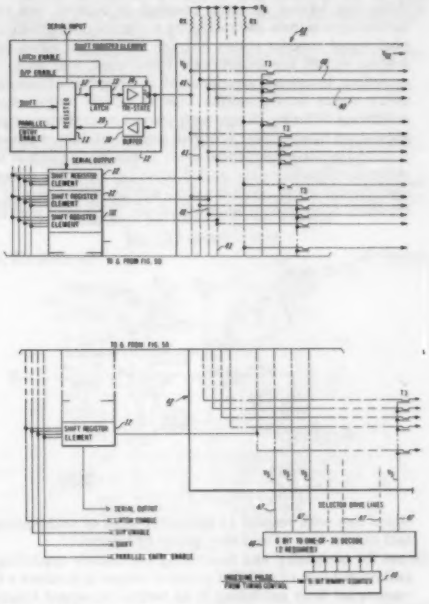
Filed Aug. 16, 1982, Ser. No. 408,110

Claims priority, application United Kingdom, Aug. 17, 1981, 8125080

Int. Cl.³ H04N *1/24*

U.S. Cl. 358—293 **9 Claims**

1. In an integrated image bar having an integral image reading and writing section and including an optical assembly and an integrated circuit assembly formed in a support structure, said integrated circuit assembly including an array of aligned low voltage, photosensitive reading elements formed on a substrate adjacent one edge thereof, an array of aligned marking elements, one for each reading element, and arranged also along said one substrate edge with the ends of said elements extending to said substrate edge forming an array of recording styli, an integrated circuit interposed between each reading element and an associated marking element including amplifier means to provide a low voltage signal proportional to the exposure and change in impedance of an associated photosensitive reading element and operative to provide a comparatively high voltage to an associated stylus for writing.



4,466,021

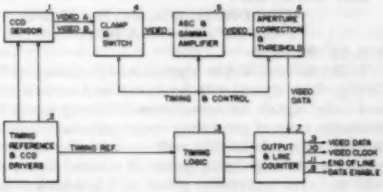
ELECTRONIC CAMERA

Earl R. Hibbard, Berkeley, Calif., assignor to Terminal Data Corporation, Woodland Hills, Calif.

Filed Sep. 21, 1982, Ser. No. 420,680

Int. Cl.³ H04N *1/12*

U.S. Cl. 358—293 **10 Claims**



1. The method of actuating an electronic-scanning camera that includes the method steps of;

(a) Enabling actuation by the presence of an electrical signal,

(b) thereafter starting to count scanning lines upon the camera first optically sensing subject matter having a predetermined relative luminance, and

(c) concluding the count of scanning lines after a selected number of scanning lines have been counted,

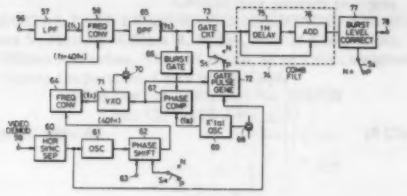
with concomitant cessation of the camera output.

4,466,022

COLOR VIDEO SIGNAL REPRODUCING APPARATUS WHICH TRANSFORMS THE RECORDED SIGNAL OF ONE SIGNAL FORMAT INTO SIGNALS OF ANOTHER FORMAT UPON REPRODUCTION

Yoshihiko Ota, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 4, 1981, Ser. No. 299,348
Claims priority, application Japan, Sep. 5, 1980, 55-123349
Int. Cl.³ H04N *9/491, 9/42*
U.S. Cl. 358—330 **3 Claims**



1. An apparatus for reproducing a color video signal from a recording medium which has a color video signal recorded in the characteristics of either a PAL system color video signal or an NTSC system color video signal, one of said signals comprising a frequency-modulated luminance signal and a frequency-converted carrier chrominance signal, a chrominance subcarrier frequency which has been converted from an original chrominance subcarrier frequency of its corresponding system into a frequency which is lower than a frequency band of the frequency-modulated luminance signal, said apparatus comprising:

reproducing means for picking up and reproducing the recorded signal from the recording medium;

means responsive to said picked up signal, for detecting whether the picked up signal has the characteristics of the PAL system color video signal or of the NTSC system color video signal;

separating means responsive to said picked up signal for individually separating the frequency-modulated luminance signal and the frequency-converted carrier chrominance signal from the output signal of said reproducing means;

demodulating means responsive to said separating means for demodulating the separated frequency-modulated luminance signal to reproduce a luminance signal of its corresponding system;

frequency converting means for frequency-reconverting the chrominance subcarrier frequency of the separated frequency-converted carrier chrominance signal into a predetermined frequency which is substantially equal to a nominal chrominance subcarrier frequency of the NTSC system color video signal;

means for combining output signals of said demodulating means and said frequency converting means;

gating means coupled to the output side of said frequency converting means for passing the frequency-reconverted carrier chrominance signal including color burst signals within horizontal scanning periods in which a component R−Y of the frequency-reconverted carrier chrominance signal is not subjected to a PAL inversion and for blocking the frequency-reconverted carrier chrominance signal excluding a frequency-reconverted color burst signal within horizontal scanning periods in which the component R−Y of the frequency-reconverted carrier chrominance signal is subjected to the PAL inversion when the PAL system color video signal is recorded on said recording medium which is being reproduced, and for passing the output signal of said frequency converting means when the NTSC system color video signal is recorded on said recording medium which is being reproduced;

delaying means coupled to said gating means for delaying an output signal of said gating means by an interval corresponding to one horizontal scanning period; and

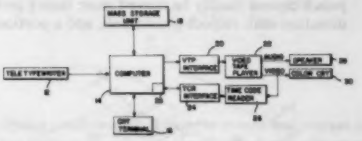
adding means for adding output signals of said gating means and said delaying means, and for producing an output signal including a carrier chrominance signal and a color burst signal.

4,466,023

VIDEO DISK PLAYER SIMULATOR, METHOD AND APPARATUS

Bruce E. Busby, Mountain View, Calif., assignor to Sony Corporation, Japan

Filed Jan. 21, 1982, Ser. No. 341,350
Int. Cl.³ G11B *5/00, 31/00;* **H04N** *5/782*
U.S. Cl. 360—55 **9 Claims**



1. A system for receiving control information and video information for simulating the operation of a video disk player playing a disk having video information and control information encoded therein, said system comprising:

video tape player means for receiving said video information and for producing video signals in response thereto, said video signals having a timing code signal associated therewith;

monitor means for displaying said video signals;

timing code signal reading means for receiving said timing code signal and for converting said timing code signal into an output signal representative of a count of the number of picture frames incorporated in the video information from a predetermined starting point;

computer means, communicating with said timing code signal reading means for receiving said output signal; and

an input device means, communicating with said computer means for supplying said control information to said computer;

said computer means being connected to said video tape player means for controlling the operation of said video tape player means in response to said control information and said output signal, such that said video signals displayed on said monitor means simulate the operation of a video disk player playing a disk having video information and control information encoded therein, and wherein said computer means includes operator controllable means for amending said control information.

4,466,024

TWO-SIDED USE OF FLOPPY DISKS

Peter D. Liu, Newton, Mass., assignor to D/Punch Co., Newton Highlands, Mass.

Filed Oct. 18, 1982, Ser. No. 435,038
Int. Cl.³ G11B *15/04, 5/00*
U.S. Cl. 360—60 **20 Claims**

1. A system for enabling the use of both sides of a conventional floppy disk/jacket unit, said unit jacket defining a first access slot to one side of said disk and a second access slot to the opposite side of said disk, said jacket further defining disk-positioning ("DP") apertures through said jacket, said disk-positioning apertures being aligned on opposite sides of said disk and centered at a first pre-set location, and said jacket still further defining a write-protect ("WP") notch at a second pre-set location on an edge of said jacket, said system comprising,

(A) for creating new disk-postioning apertures,

a disk-positioning ("DP") punch comprising a plunger and a plate spaced from and cooperating with said plunger, and

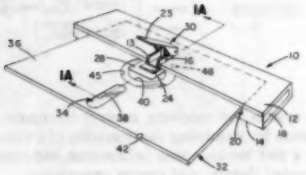
a positioning matrix to center said DP punch plunger over a third pre-set location

said third pre-set location bearing the same spacial relationship to said second access slot as said first pre-set location does to said first access slot,

said positioning matrix comprising a flat top section and a flat bottom section, said top section being joined along a portion of its perimeter to the perimeter of said bottom section to define a slot of sufficient length, depth and width to receive said unit therebetween,

one edge of said top section defining a DP notch adapted to receive said DP punch,

said slot and said notch being located, sized and shaped so that when said unit and said DP punch are fully inserted into said slot and said notch respectively, said DP punch cannot readily be moved more than ¼ inch in any direction with respect to said unit, and a portion of said



DP punch plunger is over said third pre-set location, and

(B) for creating a new write-protection notch,

a write-protect ("WP") punch comprising a plunger and a plate cooperating with and spaced from said plunger to receive an edge of said jacket therebetween, and

a positioning means to position said WP punch over a fourth pre-set location on the edge of said jacket,

said fourth pre-set location bearing the same spacial relationship to said second access slot as said second pre-set location does to said first access slot,

said positioning means comprising a spacer of a pre-established dimension corresponding to the distance between a reference point on said jacket and said fourth pre-set location,

said WP punch comprising a means for stopping insertion of said jacket edge between said WP plunger and said WP plate when said fourth pre-set location has traversed no more than ninety percent of the width of the area directly beneath said plunger.

4,466,025

FLOPPY DISC DEVICE WITH A DELAY MECHANISM

Toshiyuki Soejima, Atsugi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Sep. 17, 1981, Ser. No. 303,065

Claims priority, application Japan, Sep. 17, 1980, 55-129873

Int. Cl.³ G11B *15/12, 5/02*

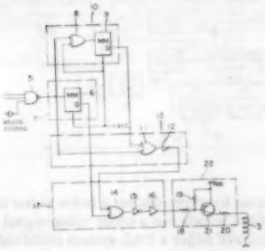
U.S. Cl. 360—61 **4 Claims**

1. A floppy disc device for writing information into and reading information from a floppy disc having a recording format such that a plurality of recording tracks are defined concentrically and each of the concentric tracks includes at least one sector section, which, in turn, includes an ID field for storing address information, a first gap following said ID field, a DATA field following said first gap and a second gap following said DATA field, said device comprising:

read/write head means including a read/write gap for writing information into and reading information from said floppy disc;

erase head means including at least one erase gap, said erase head means being spaced apart from said read/write head means thereby defining a finite gap-to-gap distance between said read/write and erase gaps in the direction of movement of said floppy disc with respect to said gaps, said gap-to-gap distance being shorter than said first gap in each of those concentric tracks located on or outside of a reference track and said gap-to-gap distance being longer than said first gap in each of those concentric tracks located inside of said reference track;

means for determining when the read/write head and erase head means are located at a concentric track inside of said reference track and for supplying a delay control signal in response thereto; and



delay circuit means for delaying energization of said erase head means over a predetermined time period after energization of said read/write head means in response to said delay control signal sufficient to allow said erase gap to be located at a point in said first gap when energized for those concentric tracks located inside of said reference track, said delay control signal being not supplied for those concentric tracks located on or outside of said reference track thereby allowing said read/write head and erase head means to be energized simultaneously therefor.

4,466,026

RECORD/REPRODUCE CIRCUIT FOR VTR

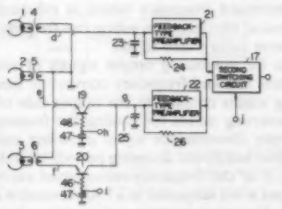
Kuniaki Miura, Ibaraki; Akira Shibata, Katsuta; Noboru Kojima; Keiichi Komatsu, both of Yokohama; Teizo Tamura, Katsuta; Makoto Konosu, Katsuta, and Yasuji Moriyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,519

Claims priority, application Japan, Feb. 23, 1981, 56-24293

Int. Cl.³ G11B *5/02;* H04N *5/782*

U.S. Cl. 360—61 **11 Claims**



1. A record/reproduce circuit for VTR comprising: at least first and second normal reproducing rotary heads with different azimuth angles;

at least one special reproducing rotary head with the same azimuth angle as that of said first normal reproducing rotary head; coupling means for connecting said rotary heads to a non-rotary circuit portion; said non-rotary circuit portion including;

a first preamplifier for amplifying a signal from said first normal reproducing rotary head,

a second preamplifier for amplifying signals from said second normal reproducing

rotary head and said special reproducing rotary head, and change-over means connected between said coupling means and said second preamplifier to selectively supply either of the signals from said second normal reproducing rotary head and said special reproducing rotary head to said second preamplifier.

4,466,027

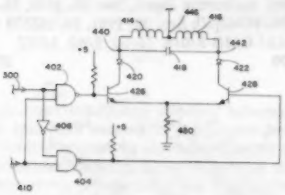
DIGITAL TAPE ERASURE CONDITIONING SYSTEM

Jones V. Howell; William R. Miller, both of Costa Mesa, and William A. Buchan, Newport Beach, all of Calif., assignors to Archive Corporation, Costa Mesa, Calif.

Filed Dec. 22, 1981, Ser. No. 333,309

Int. Cl.³ G11B *5/47, 5/55*

U.S. Cl. 360—66 **13 Claims**



1. A digital tape cartridge drive having a read-write magnetic head with erasure capability comprising:

means for supporting the magnetic head;

means for moving said magnetic head across said tape in a lateral manner; and,

a circuit connected to said erase head for providing a square wave form exceeding the recording frequency, and having at least two transistors forming a push-pull drive to said magnetic erase head for providing an AC signal to the erase head for causing said erasure portion of said head to erase the tape in a substantially alternating current wave pattern to substantially diminish the remanent hysterisis on the tape thereafter wherein said hysterisis on said tape, after the alternating current erasure, is diminished to the point where subsequent writing on said tape does not require substantial driving effort against any magnetic hysterisis, and the remanent magnetic flux is diminished on a graduated basis with respect to time.

4,466,028

DEVICE FOR REVERSING A RECORDING MEDIUM FOR USE WITH A RECORDING AND REPRODUCING APPARATUS

Yukitada Ayukawa, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

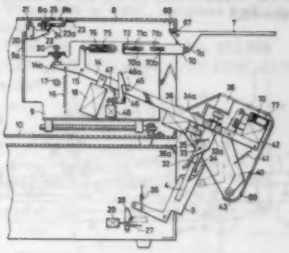
Filed Feb. 4, 1982, Ser. No. 345,904

Claims priority, application Japan, Feb. 14, 1981, 56-20291; Feb. 14, 1981, 56-20292; Feb. 14, 1981, 56-20293; Feb. 14, 1981, 56-20294; Feb. 14, 1981, 56-20295; Feb. 14, 1981, 56-20296; Feb. 14, 1981, 56-20297; Feb. 14, 1981, 56-20298; Feb. 14, 1981, 56-20299; Feb. 14, 1981, 56-20300; Feb. 14, 1981, 56-20301

Int. Cl.³ G11B *15/00, 17/00, 19/00*

U.S. Cl. 360—71 **21 Claims**

1. A device for reversing a recording medium for use with a recording or reproducing apparatus which has a mechanism to automatically eject the recording medium from behind a plane to the forward side thereof after one side of the medium has been used, comprising gripper means adapted to grip, at a gripping position thereof, the recording medium in an eject position of the recording or reproducing apparatus, driver means for driving said gripper means between said gripping position and a reversing position, said gripping means being mounted on said driver means, reversing means mounted on said driver means and operatively connected to said gripper means for angularly moving said gripper means substantially through 180 degrees to turn around the recording medium at



said reversing position of said gripper means and release means adapted to release the gripping operation of said gripper means after the recording medium has been reversed, said gripper, driver, reversing and release means being movable to a first position behind said plane and to a second position corresponding to a position in which said recording medium is ejected.

4,466,029

METHOD AND APPARATUS FOR DETECTING AN EDIT POINT ON A RECORD MEDIUM

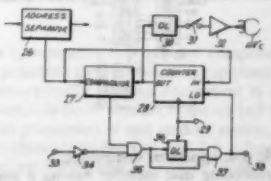
Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,197

Claims priority, application Japan, Aug. 8, 1980, 55-109664

Int. Cl.³ G11B *15/18, 27/02*

U.S. Cl. 360—72.2 **18 Claims**



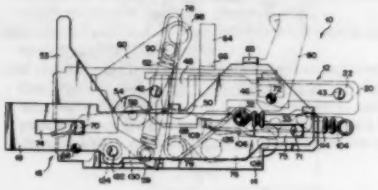
1. A method of detecting a splice point on a record medium having data recorded thereon in at least one data track and having a control track in which is recorded a periodic control signal including address signals for identifying successive intervals on said record medium, said data being recorded in successive ones of said successive intervals and said address signals normally being incremented from one interval to the next, said method comprising the steps of reproducing said address signals; detecting one of said reproduced address signals; generating successive predictive address signals starting from said one reproduced address signal and which are indicative of the addresses expected for successive intervals thereafter; and sensing when an address signal reproduced in an interval differs from the predictive address signal generated for that interval, thereby detecting the occurrence of a splice point.

4,466,030

CASSETTE LOADING/UNLOADING APPARATUS FOR CASSETTE TAPE RECORDER

Toshikazu Kato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,329
Claims priority, application Japan, Feb. 24, 1981, 56-24927[U]
Int. Cl.³ G11B *5/008, 15/00, 15/32;* **G03B** *1/04*
U.S. Cl. 360—96.5 **5 Claims**



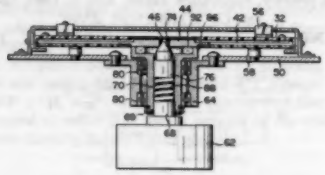
1. A cassette loading/unloading apparatus for a slot-in type cassette tape recorder using a toggle spring, characterized in that the ejecting spring is charged with the biasing force in concert with and only by the slide of a slider, which slides together with a cassette inside a cassette holder at cassette insertion, in a pushing-in stroke of the cassette insertion, and is disengaged from the slider to be locked to a charged state when the slider passes the neutral point of the toggle spring and that the charged biasing force of the ejecting spring is caused to act as an ejecting force on the slider at cassette ejection.

4,466,031

MAGNETIC DISC APPARATUS

Takao Muraoka, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 17, 1983, Ser. No. 505,484
Claims priority, application Japan, Jun. 30, 1982, 57-112957
Int. Cl.³ G11B *5/012, 25/04*
U.S. Cl. 360—97 **3 Claims**



1. A magnetic disc apparatus comprising:

a magnetic recording disc member having a magnetic recording disc medium onto or from which information is written or read, and a disc holder having a shape of a circular plate mounted on the magnetic recording disc medium, said disc holder having a cylindrical engaging bore at a position corresponding to a central position of the magnetic recording disc medium; and

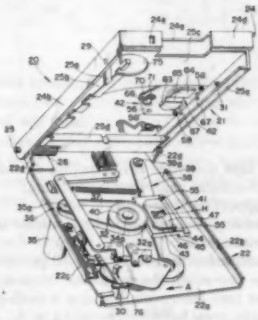
driving means, for supporting and driving the magnetic recording disc member, said driving means having a rotating member including a disc holder engagement portion for permitting the disc holder to engage therewith, a cylindrical rotating shaft portion and a cylindrical bore formed in the rotating member coaxial with the rotating shaft portion, the disc holder engagement portion having a flanged portion formed at one end of the rotating shaft portion and a recess on a surface of the flanged portion, an engaging member having a base portion fitted into the cylindrical bore and movable axially therein, and an engaging portion provided at one end of the base portion and extending from the cylindrical bore to be inserted into the engaging bore to engage said engaging bore, a compression spring received within said cylindrical bore for urging the engaging member in the insertion direction of the engaging portion, a magnet received in the recess of the disc holder engagement portion for retaining the disc holder by having the same superposed onto the flanged portion, and a driving member, which has a motor and a driving shaft for the motor, for rotating the rotating member, a tip end of the driving shaft being fitted into the cylindrical bore so that the compression spring is mounted between the tip end of the driving shaft and the base portion of the engaging member.

4,466,032

FLEXIBLE DISC RECORDING AND/OR REPRODUCING APPARATUS

Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,347
Claims priority, application Japan, Dec. 31, 1980, 55/187534; Jun. 16, 1981, 56/88563[U]; Sep. 30, 1981, 56/155575
Int. Cl.³ G11B *5/016, 15/60, 5/82, 5/012*
U.S. Cl. 360—99 **27 Claims**



1. In a flexible disc recording and/or reproducing apparatus; the combination of drive means for rotating a flexible disc record medium, head means for recording and/or reproducing signals on a surface of the flexible disc record medium while the latter is rotated by said drive means, a guide plate having a disc guiding surface at least adjacent to said head means and confronting said surface of the rotated flexible disc record medium for conforming the latter to said disc guiding surface, a positioning plate which is operatively disposed in spaced confronting relation to said disc guiding surface with said rotated flexible disc therebetween in the region of said head means, and adjustable spacing means associated with said guide and positioning plates for adjustably and precisely determining the spacing between said guiding surface and said rotated flexible disc record medium when said positioning plate is operatively disposed.

4,466,033

DISK DRIVE WITH AUTOMATIC DISC CLAMPING AND EJECTING

Richard Jordan, Los Altos; William Bull, Sunnyvale; Robert L. Ciardella, Saratoga; Robert Taggart, Portola Valley, and Frederick R. Holt, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Feb. 24, 1982, Ser. No. 351,652
Int. Cl.³ G11B *17/02, 5/016*
U.S. Cl. 360—99 **9 Claims**

1. A disc drive comprising:

a base;

a drive assembly including a drive wheel for engaging and rotating a disc, said drive assembly being mounted to said base;

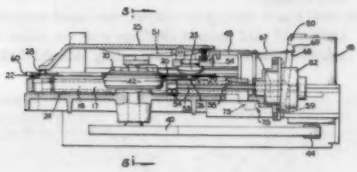
a carriage assembly mounted on said base for reciprocating movement;

a linear actuator coupled to said base for driving said carriage in said reciprocating movement;

at least one magnetic head mounted on said carriage for engaging said disc;

a lifter arm pivotally mounted on said base;

a clamper rotatably mounted on said lifter arm such that as said lifter arm pivots toward said drive wheel, said clamper is brought into engagement with said drive wheel with said disc therebetween to assure rotation of said disc with said drive wheel;



an overcenter mechanism disposed between said arm and said base, said overcenter mechanism being coupled to said arm to control the pivotal movement of said arm, said mechanism being capable of movement actuated by said reciprocating movement of said carriage such that movement of said carriage to its full rearward position causes pivotal movement of said arm, said pivotal movement occurring only when said carriage is at its full rearward position, thereby causing said clamper to move into said engagement with said drive wheel and to lift from said engagement,

whereby said disc is automatically clamped for rotation when said linear actuator is actuated.

4,466,034

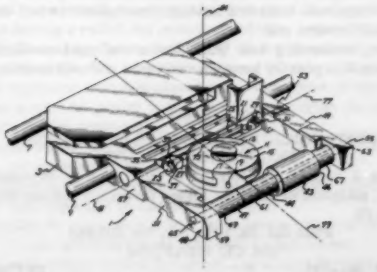
CARRIAGE ASSEMBLY

Alfred L. Newberry, Moore, Okla., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 27, 1982, Ser. No. 453,391

Int. Cl.³ G11B *21/02*

U.S. Cl. 360—106 **7 Claims**



1. In an apparatus including a recording medium and a carriage assembly which supports a transducer, said carriage assembly being slideably supported by at least one support member for rectilinear movement with respect to said recording medium, further including a means for driving said carriage assembly rectilinearly with respect to said recording medium, said carriage assembly further comprising:

an auxiliary mass support framework secured to said carriage assembly, said support framework supporting an auxiliary mass.

4,466,035

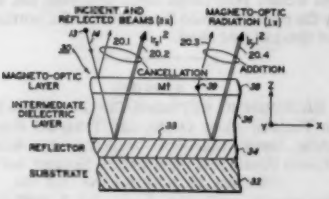
MAGNETO-OPTIC MEDIA AND SYSTEM OPTIMIZATION

G. A. Neville Connell, Cupertino, and Masud Mansuripur, Mountain View, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1982, Ser. No. 352,498

Int. Cl.³ G11B *5/32, 3/64, 7/28;* G11C *13/06*

U.S. Cl. 360—114 **25 Claims**



1. A set of optimized magneto-optic media for use in a magneto-optic recording and readout system employing an incident readout light beam of a given fixed power, P_o, said beam delivered in a linearly polarized state to said magneto-optic media and the magneto-optic radiation received from said media being detectable by said system, each member of said set of media comprising

a reflective layer having a predetermined thickness,

a first transparent layer overlying said reflecting layer and having a predetermined thickness and refractive index,

a second light transmissive layer having a predetermined thickness and exhibiting absorptivity at the wavelength of said incident readout light beam and having magneto-optic conversivity and perpendicular anisotropy,

wherein the combination of said layers exhibit antireflectivity and the incident light absorbed in said media is captured in said second light transmissive layer and said predetermined layer thicknesses and refractive index are chosen to maximize SNR according to the relationship

$$SNR = f(r_x, r_y, P_o, \{a_i\}^N_{i=1})$$

where r_x represents the reflected component of said linearly polarized incident beam, r_y represents the reflected magneto-optically induced component in an orthogonal direction, a_i is the i^{th} element of the set $\{a_i\}$ that represents variable parameters of said readout system, N is the number of elements in the $\{a_i\}$ and f is a function which is determined by the readout system chosen.

4,466,036

MAGNETIC TAPE CASSETTE

Toshihiko Ishida; Haruo Shiba, and Takateru Sato, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1983, Ser. No. 461,174

Claims priority, application Japan, Feb. 3, 1982, 57-12928[U]; Feb. 3, 1982, 57-12929[U]

Int. Cl.³ G11B *15/32, 23/04*

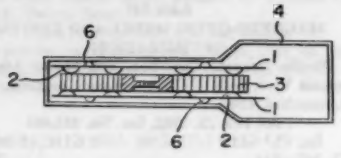
U.S. Cl. 360—132 **6 Claims**

1. In a magnetic tape cassette having two half casings enclosing at least one magnetic tape reel upon which a magnetic tape is wound, a separating sheet comprising:

a flat sheet having a first surface facing one of said half casings and a second surface facing said magnetic tape;

a plurality of first discrete protrusions in said flat sheet and projecting towards said tape; and

a plurality of second discrete protrusions in said flat sheet and projecting toward said half casing, each of said first



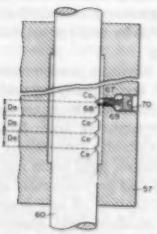
and second protrusions being separated and surrounded by flat portions of said flat sheet, said flat portions being in the plane of said sheet.

4,466,037

RECORDING REPRODUCING APPARATUS

Shigeru Yoshida; Akira Osabe, and Takayuki Hoashi, all of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Sep. 28, 1981, Ser. No. 306,360
Claims priority, application Japan, Oct. 9, 1980, 55-141198
Int. Cl.³ G11B *23/02*
U.S. Cl. 360—133 **10 Claims**



1. A recording-reproducing apparatus, comprising:
first driving means for rotatively driving a recording medium;
a magnetic head for recording information on the recording medium and for reproducing information from the recording medium;
means for mounting the magnetic head;
guide means including a rodlike member having grooves at predetermined intervals, for guiding said mounting means in a predetermined direction;
second driving means for driving said mounting means along said guide means; and
engaging means provided with said mounting means for engaging any one of the grooves of said guide means so that said mounting means may be stopped at predetermined intervals.

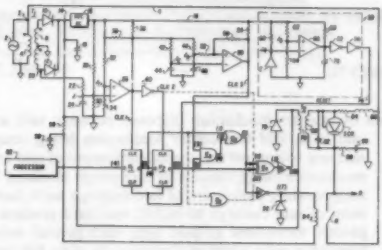
4,466,038

HYBRID POWER SWITCH

Raymond A. Robertson, Dover, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 1, 1982, Ser. No. 344,853
Int. Cl.³ H02H *7/20*
U.S. Cl. 361—8 **2 Claims**

1. Switching apparatus between an input to which an alternating current voltage may be applied and an output, comprising
means responsive to alternating current voltage, when present at said input, for deriving a first clock signal having a low state during a portion of alternate half-cycles of said alternating current voltage and a high state in between,
means responsive to alternating current voltage, when present at said input, for deriving a second clock signal that is out of phase with said first clock signal,
means responsive to said first clock signal for deriving a third clock signal that lags one of said first and second clock signals by 90°,
a source of control signals having a high state when said switching apparatus is to provide a connection between said input and said output, and a low state when said switching apparatus is to provide an open circuit between said input and said output,
first and second D-type flipflops, connected in series, said source of control signals being connected to the input of said first flipflop, and the clock inputs of said flipflop being respectively connected to said means for providing said first clock signal and said means for providing said second clock signal,
an AND gate having an output, one input connected to the output of said second flipflop, and the other input connected to said means for providing said third clock signal,



an OR gate having an output, one input connected to the output of said second flipflop and the other input connected to the output of said AND gate,
an EXCLUSIVE OR gate having an output, one input connected to the output of said second flipflop and its other input connected to the output of said OR gate,
an inverter and a primary winding of a transformer connected in series between the output of said EXCLUSIVE OR gate and a point of positive DC voltage,
an SCR device having an activating electrode, an anode and a cathode,
a secondary winding of said transformer connected between said electrode and cathode of said SCR device,
another inverter and a relay coil connected in series between the output of said OR gate and a point of positive DC voltage, said relay coil having a mechanical switch operated thereby, and
means connecting said SCR device and said mechanical switch in parallel between said input and said output.

4,466,039

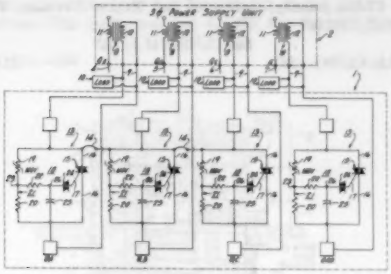
OPEN CIRCUIT CURRENT TRANSFORMER PROTECTION CIRCUIT

Richard J. Moran, and Norbert J. Reis, both of Milwaukee, Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jul. 29, 1982, Ser. No. 402,914
Int. Cl.³ H02H *7/04*
U.S. Cl. 361—35 **13 Claims**

1. A protection circuit for a current transformer having a primary winding connected in series with a current to be measured and a secondary winding having output leads adapted to be connected to a load comprising:
a bilateral gated switch connected in parallel with said secondary winding to provide a flow path for substantially all current flowing through said secondary winding other than through said load, a gate coupling circuit connected across said secondary winding and connected to a gate of

said bilateral gated switch, said gate coupling circuit including a varistor and a varistor current control means to establish a minimum varistor current prior to triggering of said bilateral gated switch, said minimum varistor current



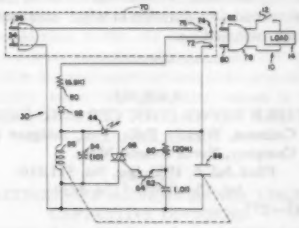
sufficient to establish a temperature stable voltage across said varistor and a current limiting means to limit the current flow through the varistor at and after triggering said bilateral gated switch.

4,466,040

SAFETY DEVICE

Richard C. Barthel, Chicago, Ill., and Richard D. Roy, Valparaiso, Ind., assignors to The Singer Company, Stamford, Conn.

Filed May 10, 1982, Ser. No. 376,440
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **13 Claims**



1. A safety device adapted to be connected between a source of AC power and power input terminals of an electric appliance having a switch for selectively closing a current carrying path for said appliance, said safety device functioning to prevent the application of operating power to said appliance when said appliance switch is closed upon connection of said appliance to said AC power source through said safety device, said safety device comprising:

input means for connecting said safety device to said AC power source;

output means for connecting said power input terminals of said appliance to said safety device;

means for providing a low level sensing current path between said input means and said output means;

power supply means for providing a high level operating current path between said input means and said output means a predetermined time after the connection of both said input means to said AC power source and said output means to said appliance power input terminals, said high level operating current path bypassing said low level sensing current path; and

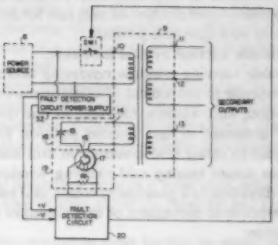
sensing means responsive to current flow through said low level sensing current path for disabling said power supply means prior to the expiration of said predetermined time.

4,466,041

FAULT PROTECTION SYSTEM FOR POWER SUPPLIES THAT USE FERRO-RESONANT TRANSFORMERS

Arthur F. Witulski, Boulder, and Bruce R. Schwickrath, Thornton, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 1, 1983, Ser. No. 462,742
Int. Cl.³ H02H *3/08*
U.S. Cl. 361—93 **11 Claims**



1. In a power system which uses a ferro-resonant transformer, a fault detection system comprising:

a ferro-resonant transformer having a primary winding connected to a source of power, at least one secondary winding connected to respective secondary circuis, and a ferro-resonant winding connected to a capacitor to form a ferro-resonant circuit;

means for monitoring the current flowing in said ferro-resonant circuit;

detection circuitry coupled to said ferro-resonant current monitoring means for generating a fault condition signal whenever said ferro-resonant current changes by at least a predetermined amount;

power supply means for supplying power to said fault detection circuit; and

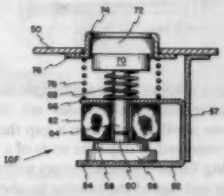
disconnect means for disconnecting said primary winding from said source of power in response to said fault condition signal.

4,466,042

TRIP INDICATOR ASSEMBLY FOR ELECTRONIC CIRCUIT BREAKER

Henry J. Zylstra, Alburnette, and Donald R. Venzke, Cedar Rapids, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 492,515
Int. Cl.³ H02H *1/00*
U.S. Cl. 361—115 **6 Claims**



1. A trip indicator assembly corresponding to a predetermined type of fault current for use in a circuit breaker having interruption means operable for interrupting a plurality of line conductors and including detecting means for detecting any one of a plurality of different type of fault current one of which corresponds to said indicator and for operating said interrupting means to interrupt said line conductors, the improvement comprising,

a coil energized by said detecting means in response to the detection of a fault current corresponding to said predetermined type,

an armature for said coil movable between a normal position and an operated position,

a permanent magnet for retaining said armature in said normal position in response to movement of said armature from said operated position to said normal position,

a spring biasing said armature for movement from said normal position to said operated position and effective in response to energization of said coil for moving said armature to said operated position,

an indicator carried by said armature,

a movable viewing window rendering said indicator visible in response to movement of said armature to said operated position, said window movable in one direction to move said armature to said normal position for enabling said magnet to retain said armature in said normal position,

and bias means biasing said viewing window opposite said one direction to a position in which said indicator is visible in response to movement of said armature to said operated position.

4,466,043

GAS DISCHARGE SURGE VOLTAGE ARRESTER AND PRODUCTION METHOD

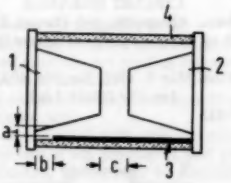
Hartwig Munt, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,549

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113349

Int. Cl.³ H02H *9/06*

U.S. Cl. 361—120 **11 Claims**



1. Surge voltage arrester with a gas-tight housing wherein two truncated cone-shaped electrodes are disposed respectively opposite one another and form a gap therebetween, the electrodes being received in opposite ends of a tubular insulating body and being formed with a bottom surface facing away from one another and out of the tubular insulating body and a lateral conical surface, comprising at least one strip of electrically conductive material serving as an ignition strip, said strip extending within the tubular body over part of the length thereof in direction from one to the other electrode, at least a part of said ignition strip terminating at a first distance opposite the lateral conical surface of the one electrode and at a second distance by which it is spaced from the bottom surface of the one electrode, at least one of said distances being shorter than the length of the gap.

4,466,044

CENTRAL LOCKING SYSTEM

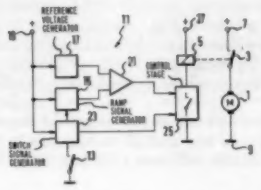
Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,557

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1982, 3205167

Int. Cl.³ H01H *47/22*

U.S. Cl. 361—152 **23 Claims**



22. Central locking system comprising: a plurality of electric locking drives (**1**; **31**; **131**; **201**; **301**), a time control circuit means (**11**) triggerable by at least one control switch (**13**; **39**; **139**; **217**, **219**; **317**; **319**; **409**) in switching over from a first switch position into a second switch position, said circuit means switching said locking drives on for a predetermined time duration in a predetermined drive direction, characterized in that said control switch (**217**, **219**; **317**, **319**) is closed in the second switch position and in that a switch transistor (**225**, **227**; **325**, **327**) having a collector-emitter path connected in parallel with said control switch (**217**, **219**; **317**, **319**) is controlled by said time control circuit means (**213**, **215**, **223**, **225**; **313**, **315**) for short-circuiting said control switch (**217**, **219**; **317**, **319**) during said predetermined time duration in which said locking drives (**201**; **301**) are switched on.

4,466,045

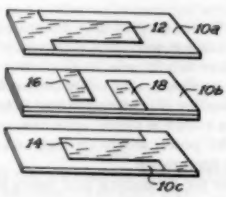
ADJUSTABLE MONOLITHIC CERAMIC CAPACITOR

James H. Coleman, Wichita Falls, Tex., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 6, 1983, Ser. No. 511,416

Int. Cl.³ H01G *5/24, 4/34*

U.S. Cl. 361—277 **5 Claims**



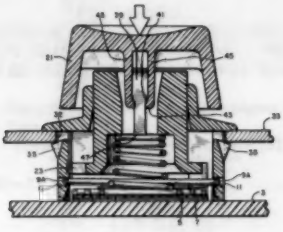
1. A monolithic ceramic capacitor comprising a ceramic body, at least two main sheet electrodes buried in said body and spaced apart by a central layer of said ceramic body one of said main electrodes extending to one end of said body and the other of said main electrodes extending to the opposite end of said body, said two main electrodes having a region of overlap that is spaced from said body ends and the two side edges of said body; and at least two spaced apart auxiliary sheet electrodes buried in said central ceramic layer and extending to at least one of said side body edges, whereby the capacitance as measured at said opposite body ends between said two main electrodes increases when any one of said auxiliary electrodes is electrically connected to either one of said main electrodes.

4,466,046

CAPACITIVE KEYBOARD SWITCH

Walter L. Cherry, Winnetka, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 379,059, May 17, 1982, which is a continuation-in-part of Ser. No. 318,483, Nov. 5, 1981, abandoned. This application Apr. 6, 1983, Ser. No. 482,567
Int. Cl.³ H01G 5/01
U.S. Cl. 361—288 19 Claims



1. A capacitive switch, comprising:
an electrically conducting plate;
a dielectric film covering said plate;
capacitance means for resiliently moving between an expanded rest position and a compressed activation position with respect to said plate;
pushbutton means contacting said capacitance means for compressing the capacitance means to its activation position when the pushbutton means is pressed and for releasing the capacitance means to its expanded rest position when the pushbutton means is released; and
means for supporting said capacitance means in spaced relation to said plate, so that the capacitance means and plate define a predetermined capacitance when the capacitance means is in its compressed position and a substantially zero capacitance when the capacitance means is in its rest position.

4,466,047

CAPACITOR FOR MEDIUM-RANGE VOLTAGE CAPACITIVE DIVIDERS

Jean P. Avocat, 4, rue Philippe Lebon, 59500 Lambres Lez Douai, France

Filed Aug. 6, 1981, Ser. No. 290,431
Int. Cl.³ H01G 1/005
U.S. Cl. 361—303 18 Claims

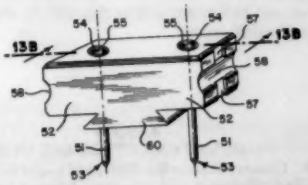
1. A capacitor for use in medium voltage capacitive dividers having spaced plates encapsulated within an insulating material, said plates being free of opposing bends, protuberances, projections and the like of small radii of curvature, characterized by a combination of
(a) a first plate comprising at least one thick, generally flat disc with rounded edges, the radius of curvature of said edges being of a magnitude sufficient to avoid the creation of dangerous electrical stresses internally of the insulating material, said first plate being connected electrically by a conducting rod to a first terminal;
(b) a mass of solid dielectric material surrounding the first plate and a portion of the conducting rod where said rod is connected to the first plate, the outer surface of the dielectric material being substantially equidistant at all points from said first plate, said mass of solid dielectric material also forming a hollow neck constituted of at least one rounded lobe surrounding another portion of the rod, the lobe being connected to the mass of solid dielectric material surrounding the first plate by a fillet having a radius of curvature of a magnitude sufficiently large to avoid creation of a dangerous dielectric overload in the insulating material;
(c) a second plate comprising a conducting material covering the external surface of the mass of dielectric material with the exception of the neck, said second plate being connected electrically by a conductor to a second terminal;
(d) an exterior insulating mass of a solid resin which encapsulates the mass of solid dielectric material and the second plate;
(e) said exterior insulating mass having an outer surface in which are embedded the two terminals for the two plates and a support member spaced from, and disposed generally coaxially with, one of the two terminals.

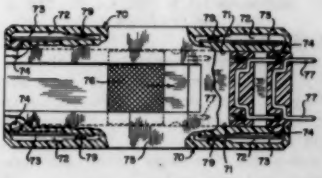
4,466,048

ELECTRICAL SHUNTS FOR INTEGRATED CIRCUIT APPLICATIONS

Pierre P. Schwab, Ocean Springs, Miss., assignor to B/K Patent Development Co., Inc., Los Angeles, Calif.

Division of Ser. No. 199,354, Oct. 21, 1980, Pat. No. 4,356,361. This application Mar. 18, 1982, Ser. No. 359,240
Int. Cl.³ H02B 1/00
U.S. Cl. 361—331 5 Claims





1. An electrical shunt comprising:
an electrically insulating, substantially rectangular housing block including a base, a top, and two end walls; and
a pair of elongated, electrically conducting terminals secured to and extending outwardly from the base of the housing block in substantially mutually parallel spaced relationship;
said shunt being further characterized in that:
the housing has a dove-tail shaped portion extending from the outer surface of the base wall between the electrically conducting terminals and adapted for loading the shunt

onto a mounting bar having a groove correspondingly shaped to receive said dove-tail shaped portion;

the outer surface of the two end walls each has a horizontal groove and a vertical groove for respectively loading the shunt onto and dispensing the shunt from a dispenser cartridge; and

the top surface of the housing has a pair of spaced-apart recesses partially filled with an adhesively resilient cushion material, said recesses being located in alignment with the axes of the electrically conducting terminals extending outwardly from the base of the housing block and adapted to receive and retain the terminals of a second shunt with sufficient adhesion to allow stacking of a plurality of electrical shunts.

5. A cartridge-dispenser for loading electrical shunts according to claim 1 and installing and extracting said shunts from integrated circuits, said cartridge-dispenser comprising:

a substantially flat elongated housing defining

a longitudinal recess extending the full length of said housing to slidably receive and house a stack of shunts, and

an elongated cavity disposed adjacent the longitudinal recess;

ball means supported by the housing at an end of the elongated cavity and extending into the longitudinal recess;

spring means supported by the housing within the elongated cavity and urging the ball means into engagement with the stack of shunts located within the longitudinal recess to inhibit movement of the electrical shunts past said ball means;

a cover fastened to the surface of the elongated housing and having an elongated aperture therein substantially narrower than the elongated recess in the housing and extending for at least a portion of the length of the elongated housing; and

a button movably supported between the housing and the cover and extending into the elongated recess for engaging the stack of shunts located therein to move said shunts past said ball means and to dispense the shunts from the longitudinal recess.

4,466,049

MODULAR CIRCUIT BOARD GUIDE

John W. Chaney, Sharonville, Ohio, and Roger G. Royer, Madison, Ind., assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio

Continuation of Ser. No. 261,591, May 7, 1981, abandoned. This application Jul. 1, 1983, Ser. No. 510,160

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—383 **5 Claims**

1. A modular circuit board guide assembly, comprising:

(a) a plurality of identical molded plastic modules, each having a one-piece generally C-frame construction including respective upper and lower limbs extending from a main body section;

(b) guide means for a single circuit board formed by and between said upper and lower limbs of cooperating side-by-side modules, said guide means comprising a slot having two sides, one side formed by one module and the other side formed by the other module;

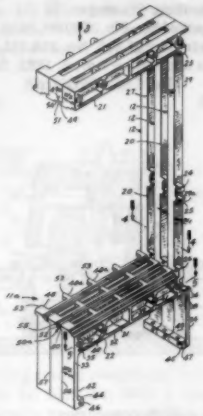
(c) a circuit board connector mounted to said main body section of at least one of said modules;

(d) fastener means for securing said plurality of modules together in seriatem;

(e) registering means for locating said plurality of modules in a predetermined orientation with respect to one another;

(f) a plenum chamber integrally formed on the respective lower limbs of said modules and enclosed with suitable cover plates; and

(g) a vent passage formed across each of said upper and lower limbs, transversely through said slot, said lower



limb vent passage in vent communication with said plenum chamber.

4,466,050

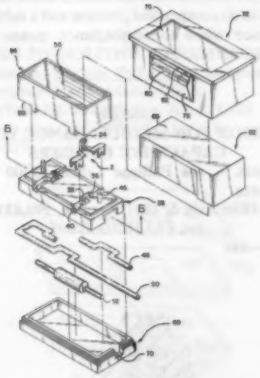
LIGHT DISPLAY ASSEMBLY

Joseph L. Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 238,784, Feb. 27, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,131

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—307 **13 Claims**



1. A light display comprising:

a light-emitting semiconductor device;

a pair of conductive contact components each comprising a planar body portion having an upwardly directed resilient finger portion at one end and depending insulation displacement means at an end opposite said one end for establishing electrical connection with an insulated conductor, said upward finger portions having remote ends spaced apart in opposition to one another and profiled for resilient support of said semiconductor therebetween;

a dielectric housing having a profiled cavity therein extending from a top surface to a bottom surface thereof for retentive receipt of said contact components therein, said housing having channels formed within said bottom sur-

face into which said insulation displacement means of said contact components project;

conductor means situated within said channels and in electrical engagement with said insulation displacement means;

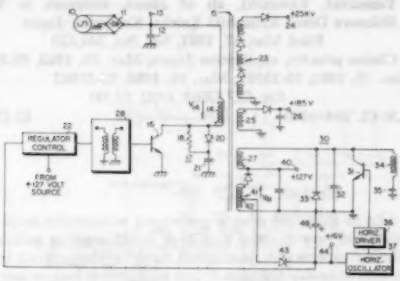
receptacle block means of a general box-like configuration having an interior chamber and one side open to receive said dielectric housing in said chamber, with said semiconductor device facing an optically transparent display surface of said receptacle block means.

4,466,051

REGULATED POWER SUPPLY INCORPORATING A POWER TRANSFORMER HAVING A TIGHTLY COUPLED SUPPLEMENTAL POWER TRANSFER WINDING

William V. Fitzgerald, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,757
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **9 Claims**



1. A regulated power supply for a television receiver incorporating a plurality of load circuits comprising:

an unregulated voltage source electrically isolated from said load circuits;

a transformer core having first and second transformer core legs;

a first transformer winding, wound on said first transformer core leg and having first and second terminals, said first terminal coupled to and electrically nonisolated from said unregulated voltage source;

means, coupled to said first transformer winding second terminal for selectively energizing said first winding from said unregulated voltage source;

a second transformer winding, wound on said second transformer core leg, electrically isolated from said first transformer winding, for powering a given one of said load circuits in response to the energization of said first transformer winding;

means for controlling the operation of said energizing means to maintain a constant voltage supply for said load circuits; and

a third transformer winding electrically isolated from said first transformer winding and wound on said first transformer core leg to overlay said first transformer winding for powering at least one of said load circuits in response to the energization of said first transformer winding.

4,466,052

PROGRAMMABLE DC-TO-AC VOLTAGE CONVERTER

Guy C. Thrap, 2171 La Amatista Rd., Del Mar, Calif. 92014

Filed Dec. 14, 1981, Ser. No. 330,166
Int. Cl.³ H02M *1/12*
U.S. Cl. 363—41 **7 Claims**

1. A programmable DC-TO-AC voltage converter for converting a DC voltage signal provided across two DC voltage terminals to an AC voltage signal having predetermined characteristics, comprising

an AC voltage terminal;

a first switch connected between the AC voltage terminal and one of said DC voltage terminals;

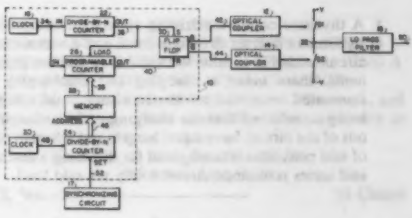
a second switch connected between the AC voltage terminal and the other of said DC voltage terminals;

a bistable switching circuit coupled to the first and second switches for operating the first and second switches to alternatively connect either the one DC voltage terminal or the other DC voltage terminal to the AC voltage terminal in an alternating high frequency sequence to provide a high frequency pulsed voltage signal at the AC voltage terminal, wherein the switching circuit includes

first means for sequentially providing a pulse-width-modulated control signal to operate the first and second switches at a predetermined high frequency; and

second means for varying the duty cycle of the control signal pulses at a predetermined low frequency in accordance with a predetermined waveform pattern at said predetermined low frequency to thereby vary the duty cycle of said high frequency pulsed voltage signal at the AC voltage terminal in accordance with said predetermined waveform pattern at said predetermined low frequency; and

a low pass filter connected to the AC voltage terminal for filtering said high frequency pulsed voltage signal to provide an AC voltage output signal at said predetermined low frequency and having said predetermined waveform;



wherein the first means comprises

a first clock for providing a first pulsed clock signal at N times said predetermined high frequency, wherein N is an integer greater than one;

a divide-by-N counter connected to the first clock for providing a pulsed set signal at said predetermined high frequency;

an R-S flip-flop connected to the divide-by-N counter to be set in response to said set signal; and

a programmable counter connected to the divide-by-N counter to enable count signals indicating programmed counts to be loaded in the programmable counter sequentially in response to the set signal, connected to the first clock for counting the pulses in said first clock signal and connected to the flip-flop for providing a reset signal thereto upon reaching a pulse count equal to the programmed count loaded therein to thereby cause the flip-flop to provide said pulse-width-modulated control signal; and

wherein the second means comprises

a second clock for providing a second pulsed clock signal at N' times said predetermined low frequency, wherein N' is an integer greater than one;

a divide-by-N' counter connected to the second clock for providing a sequential count signal that is repetitive at said predetermined low frequency; and

a memory having a sequence of programmed counts stored therein to be read out in response to being addressed by said sequential count signal for defining said predetermined waveform pattern, wherein the memory

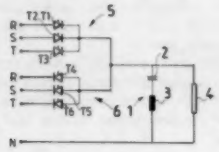
is connected to the programmable counter and the divide-by-N' counter for providing said sequence of programmed counts to the programmable counter in response to said sequential count signal to cause the programmable counter to vary the timing of said reset signal in accordance with said predetermined waveform pattern at said predetermined low frequency to thereby accordingly vary the duty cycle of said high frequency pulsed signal at the AC voltage terminal.

4,466,053

THYRISTOR CONVERTER DRIVE

Risto Kontturi; Matti Kähkipuro, and Pertti Saraasaari, all of Hyvinkää, Finland, assignors to Elevator GmbH, Baar, Switzerland

Filed Dec. 4, 1981, Ser. No. 327,699
Claims priority, application Finland, Dec. 16, 1980, 803932
Int. Cl.³ H02M 7/155
U.S. Cl. 363—129 **4 Claims**



1. A thyristor converter driving apparatus, comprising:

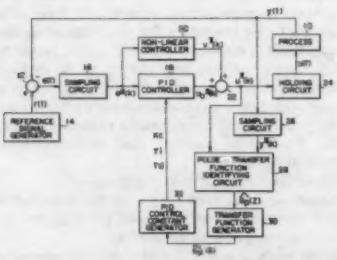
a thyristor converter driving a load, and a series resonance circuit added in parallel with said load and having components, there being a charging and discharging period associated with said resonance circuit, said components being so selected that the charging and discharging periods of the circuit have equal length; and wherein circuitry of said converter is configured for directing a discharge of said series resonance circuit solely via said load.

4,466,054

IMPROVED PROPORTIONAL INTEGRAL-DERIVATIVE CONTROL APPARATUS

Takashi Shigemasa, and Yasuo Takagi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 24, 1982, Ser. No. 381,445
Claims priority, application Japan, Jun. 1, 1981, 56-82512
Int. Cl.³ G05B 13/04
U.S. Cl. 364—162 **5 Claims**



1. A process control apparatus comprising:

first sampling means for sampling a control deviation signal of a process value signal and a reference signal;

PID controlling means for performing a sampled-value PID calculation with respect to an output signal from said first sampling means by using sampled-value PID control constants and for generating a PID control signal;

non-linear controller means for converting an output signal from said first sampling means to a non-linear signal;

holding means for holding a sum signal of the PID control signal and the non-linear signal and for supplying a hold signal controlling a process value to a process;

second sampling means for sampling the process value signal; and

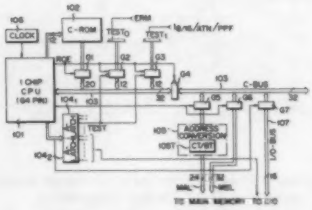
control constant generating means for calculating sampled-value PID control constants on the basis of an output signal from said second sampling means and the sum signal of the PID control signal and the non-linear signal and for supplying an operation result to said PID controlling means.

4,466,055

INFORMATION PROCESSING SYSTEM INCLUDING A ONE-CHIP ARITHMETIC CONTROL UNIT

Tsuneo Kinoshita; Fumitaka Sato, both of Tokyo, and Isamu Yamazaki, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1981, Ser. No. 244,623
Claims priority, application Japan, Mar. 19, 1980, 55-35499; Mar. 19, 1980, 55-35501; Mar. 19, 1980, 55-35502
Int. Cl.³ G06F 3/00, 13/00
U.S. Cl. 364—200 **13 Claims**



1. An information processing system comprising:

an arithmetic control unit fabricated on one chip:

a control memory external to said arithmetic control unit in which can be stored a plurality of microprograms each comprising a plurality of microinstructions for controlling said arithmetic control unit:

a memory bus external to said arithmetic control unit adapted to be coupled to a main memory external to said arithmetic control unit;

an input/output bus external to said arithmetic control unit adapted to be coupled to at least one input/output device;

a common bus coupled to said arithmetic control unit, said control memory, said memory bus and said input/output bus for transferring information between the arithmetic control unit and the control memory, between the arithmetic control unit and the memory bus and between the arithmetic control unit and the input/output bus;

first means for separating said common bus exteriorly of said arithmetic control unit into a first bus portion to which are coupled said arithmetic control unit and said control memory and a second bus portion to which are coupled said memory bus and said input/output bus;

said arithmetic control unit including means coupled to said first means for causing said first means to selectively either couple said first and second bus portions or to separate said common bus into said first and second bus portions, said means of said arithmetic control unit causing said first means to separate said common bus into said first and second bus portions when microinstructions are to be read from said control memory to said arithmetic control unit, said arithmetic control unit being coupled to said control memory and supplying microinstruction addresses thereto

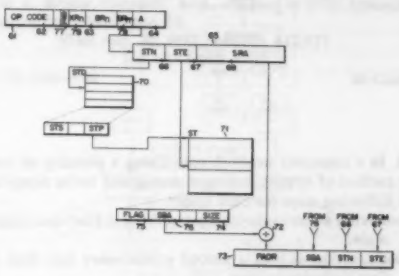
in response to which microinstructions are read out of said control memory onto said first bus portion of said common bus when said first means is caused to separate said common bus into said first and second bus portions.

4,466,056

ADDRESS TRANSLATION AND GENERATION SYSTEM FOR AN INFORMATION PROCESSING SYSTEM

Kenichi Tanahashi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 31, 1981, Ser. No. 288,695
Claims priority, application Japan, Aug. 7, 1980, 55-107704
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **8 Claims**



1. In an information processing system including an address translation and generation system, a memory unit in which is stored a segmented program comprising instructions including first and second instructions and in which is stored at least one address conversion table used for converting logical addresses into segment base addresses, and an arithmetic logic unit including an accumulator, the improvement comprising:

(A) means for generating a physical address through addition of a segment base address and a segment relative address, the segment base address being obtained by address conversion from a logical address to be converted specified directly or indirectly by a field of said first instruction, said segment relative address being specified by a field of said first instruction, and the addition being specified by an op code of said first instruction;

(B) a register specified by a field of said first instruction for storing said physical address and

(C) means for generating an effective address through addition of said physical address stored in said register and a displacement specified by a displacement field of said second instruction.

4,466,057

DIGITAL DATA PROCESSING SYSTEM RESPOONSIVE TO INSTRUCTIONS CONTAINING OPERATION CODE MODIFIERS

David L. Houseman, Westchester, Pa.; Thomas M. Jones, Chapel Hill, N.C.; Michael S. Richmond, Beaverton, Oreg., and John F. Pilat, Raleigh, N.C., assignors to Data General Corporation, Westboro, Mass.

Filed Sep. 15, 1981, Ser. No. 303,312
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—200 **9 Claims**

1. In a digital computer system including

processor means responsive to instructions received in said processor means,

said instructions including an operation code syllable containing an operation code and operand syllables representing items of data processed by said processor means and

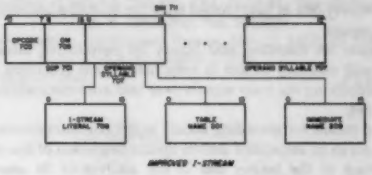
said processor means including

operation code interpretation means responsive to said operation codes for controlling said processor means and

operand interpretation means controlled by said operation code interpretation means for interpreting said operand syllables,

means for responding to certain said instructions having variable numbers of said operand syllables comprising:

(1) a number of operands specifier in said operation code



syllable of each of said certain instructions for specifying said number of operand syllables in said certain instruction; and

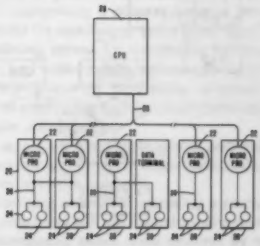
(2) means in said operation code interpretation means responsive to said number of operands specifier in a received said certain instruction for causing said operand interpretation means to interpret said number of operand syllables specified by said number of operands specifier in said received certain instruction.

4,466,058

METHOD AND APPARATUS FOR ESTABLISHING PRIORITY BETWEEN PROCESSING UNITS HAVING A COMMON COMMUNICATION CHANNEL

Donald J. Girard; Robert R. O'Dell; Albert J. Chanasyk, and William M. Belknap, all of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 2, 1981, Ser. No. 308,744
Int. Cl.³ G06F *3/00, 9/46*
U.S. Cl. 364—200 **18 Claims**



1. A data processing system wherein a plurality of stations share a communication channel by way of which transfer of data between stations takes place wherein each of the stations is assigned a binary address representing the priority of access of the station to the communication channel, an apparatus associated with each station for controlling access to the communication channel comprising:

means for outputting a plurality of binary bits in a first and second state which collectively comprise the address of its associated station, each of the said binary bits respectively correspond to individual bits in said address starting with the most significant bit of the address and ending with the least significant bit;

means for generating a plurality of time slots of fixed duration;

means for transmitting busy signals over the communica-

tions channel for the fixed duration of one of said time slots when enabled;

means for receiving the busy signals transmitted by another station over the communication channel when enabled;

means responsive to the outputting of each of said binary bits in said first state for enabling said transmitter means to output the busy signals over the communication channel for the fixed duration of said time slot, said enabling means being further responsive to the outputting of each of said binary bits in said second state for enabling said receiving means;

means for disabling said binary bit outputttting means and said enabling means in response to said receiving means receiving the busy signals over said communication channel;

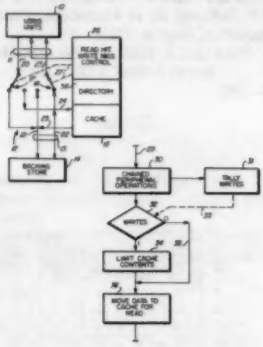
and means for awarding access to the communication channel to its associated station upon completion of the outputting of the binary bits in the address of its associated station by said generating means and not receiving busy signals over said communication channel.

4,466,059

METHOD AND APPARATUS FOR LIMITING DATA OCCUPANCY IN A CACHE

Arlon L. Bastian, Pima County; Marc E. Goldfeder, Tucson, and Michael H. Hartung, Pima County, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,738
Int. Cl.³ G06F *3/06, 13/00*
U.S. Cl. 364—200 **35 Claims**



1. The method of operation a data storage hierarchy coupled to user units and having a backing store and a caching buffer store with means to store data in said buffer store based upon addressable storage areas of said backing store, both of said stores having a plurality of addressable storage areas;

including the steps of:

monitoring chained requests for access to said storage hierarchy received from said units;

setting a status bit based upon monitoring a predetermined type of said chained requests for access which indicates whether or not writing operations for the storage of data are included in the monitored chained requests; and

storing such written data in said backing store when said status bit has been set; and

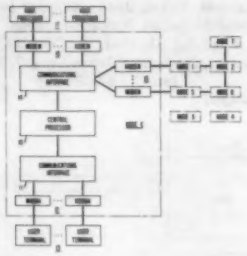
removing data stored in said buffer store related to said written data from said buffer store whenever said status bit indicates a one of said given writing operations.

4,466,060

MESSAGE ROUTING IN A COMPUTER NETWORK

Guy G. Riddle, Piscataway, N.J., assignor to AT&T Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 11, 1982, Ser. No. 348,158
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **22 Claims**



1. In a computer network comprising a plurality of nodes, the method of routing messages among said nodes comprising the following steps for each node:

receiving a first exclusionary tree from at least one neighbor node,

constructing at least a second exclusionary tree from said first exclusionary tree,

transmitting said second exclusionary tree to a neighbor node, and

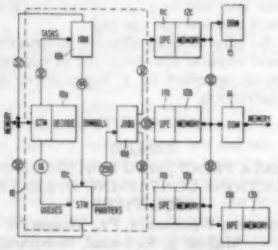
routing messages according to the information in said first exclusionary tree.

4,466,061

CONCURRENT PROCESSING ELEMENTS FOR USING DEPENDENCY FREE CODE

Alfred J. DeSantis, Berwyn, and Joseph S. Schibinger, Phoenixville, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 8, 1982, Ser. No. 386,336
Int. Cl.³ G06F *15/16, 9/06*
U.S. Cl. 364—200 **10 Claims**



1. In a data processing system for executing imperative code including operators and memory addresses, the combination comprising:

means for forming strings of logically dependent operators into logically independent queues;

storage means for storing said logically independent queues; and

a plurality of processing means coupled to said storage means for individually receiving different ones of said queues for concurrent execution.

6. In a data processing system for receiving and executing sequential code including operators and memory addresses,

said system including a plurality of processing means, the method comprising:

receiving said sequential code;

determining when an operator does not require the result of a previous operation indicating a logical independency;

forming strings of logically independent and subsequent logically dependent operators into logically independent queues; and

transmitting different ones of said queues to different individual processing means for concurrent execution.

4,466,062

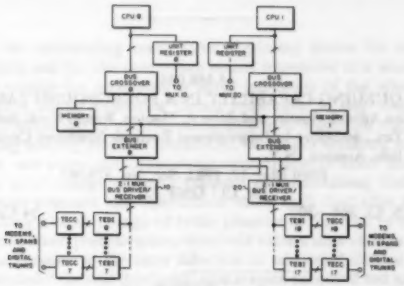
APPARATUS FOR CCIS DATA TRANSFER BETWEEN A CPU AND A PLURALITY OF DATA TERMINAL EQUIPMENT

Krikor A. Krikor, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Aug. 30, 1982, Ser. No. 412,617

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **10 Claims**



1. In a CCIS system, apparatus for data transfer between a computer and a plurality of data terminal equipment comprising:

a duplex pair of CPUs including an active and ready standby CPU;

corresponding first and second CPU buses connected to said CPU;

corresponding first and second multiplexer units, each connected to each of said CPUs via said corresponding CPU buses for connecting one of said plurality of terminal equipments with said active CPU;

a plurality of bus interface means connected between said first and second multiplexer units and said plurality of terminal equipment, each of said plurality of bus interface means connected to a corresponding one of said plurality of terminal equipment;

each of said bus interface means including:

means for transmitting connected between said terminal equipment and one of said multiplexer units via said CPU buses for collecting and retransmitting data to said active CPU;

means for periodically detecting said transfer of data from any one of said terminal equipment to said means for transmitting, said means for periodically detecting operated to periodically examine said means for transmitting for said data; and

second means for detecting connected between said particular terminal equipment and said active CPU via, said corresponding CPU bus and said second means for detecting operated in response to said data transfer, from said terminal equipment to said means for transmitting, to indicate to said CPU that high priority data has been transferred to said means for transmitting, whereby said CPU is immediately interrupted and said CPU initiates an immediate transfer of said data from said means for transmitting to said active CPU for storage, analysis and response.

4,466,063

SYSTEM INTERCOMMUNICATION PROCESSOR USED IN DISTRIBUTED DATA PROCESSING SYSTEM

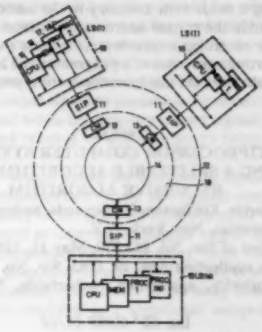
Gérard Segarra, Jossigny, and Francois J. Phulpin, Boussy Saint Antoine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 202,809, Oct. 31, 1980. This application Aug. 8, 1983, Ser. No. 521,021

Claims priority, application France, Nov. 7, 1979, 79 27410

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **8 Claims**



1. A distributed data processing system, comprising a general communications network and a plurality of local systems which each include a central processing unit, associated memory, a peripheral device and a residential program, in which distributed system control of the data processing in each local system is effected by the local system itself, wherein each local system is interfaced to the network by a respective system intercommunication processor, each system intercommunication processor comprising a preprogrammed processor, local interfacing means for interfacing to the associated local system, network interfacing means for interfacing to the communications network, and buffer means bidirectionally coupled to the associated preprogrammed processor, network interfacing means and local interfacing means, each system intercommunication processor comprising:

translation means for translating global addressing and coding parameters into respective local addressing and coding parameters and vice versa;

resource procuring means for receiving a resource procurement request from the associated local system and thereupon interrogating other local systems by means of the network for locating available resources in said other local systems, and analyzing acknowledgments received by means of the network and thereby locating available resources (if present) and in the case of parallel positive acknowledgments signifying the presence of available resources effecting a choice thereamong while freeing unchosen resources;

control means comprising protection means for selectively controlling access to the local resources and information objects in the associated local system upon the receipt of requests via the network in dependence upon the availability of such resources and/or objects and the authorization of a user program giving rise to such requests, optimization means for sharing the use of a resource between user programs, and failure management means for monitoring messages received for lack of coherence and thereupon generating a request for a repeat, and upon reception of such a request for a repeat via the network effecting a

retransmission of the afflicted message, and in the case of repeated failure of transmission or reception of a message by a local system generating a failure detection signal and isolating the failed local system from the general communications network; and

simulation means for simulating control-panel-emanated signals for effecting a reset to an initial state for a sub-system of said distributed data processing system as defined in the relevant signal, an initial program load, an instruction by instruction step-wise program execution, a loading and reading of the general registers in a local system, an interrupt of programs being executed in the associated local system, and a start of specific programs;

said system intercommunication processor including initialization means for receiving from a predetermined pilot local system a remote loading request and thereupon loading a read/write memory in the associated local system and in the system intercommunication processor itself and for receiving a remote start request over the network for starting execution of a program in the local system and associated system intercommunication processor.

4,466,064

MULTIPROCESSOR COMPUTER SYSTEM FOR EXECUTING A SPLITTABLE ALGORITHM, NOTABLY A RECURSIVE ALGORITHM

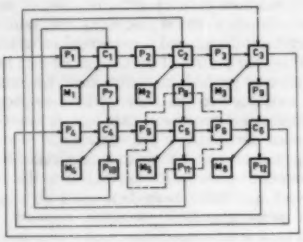
Alain J. Martin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 262,570, May 11, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,375

Claims priority, application Netherlands, May 14, 1980, 8002787

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **10 Claims**



1. A multiprocessor computer system for executing a recursive algorithm on input data, comprising a plurality of at least six modules which at least substantially fill a functional array of modules of p(p>3) functional rows and n(n>2) functional columns, wherein each module has a uniform cycle of m(−4>m>3) array connections, namely a first column-wise and a first row-wise array connection for receiving a first activation signal and first parameter data for the execution of an algorithm and sending a first result signal after executing said algorithm on said first parameter data, wherein each module has a processor element (**300**), a program memory (**302**), data memory, and interconnection means for interconnecting said processor element, program memory, data memory and array connections; means for executing, in each module upon reception of said first activation signal, a recursion procedure step in said algorithm to produce first and second activation signals associated with second parameter data for the execution of said algorithm and to combine second results of executing the algorithm on said second parameter data upon completion of said second results, or, as the case may be, to execute an elementary procedure when said first data are elementary data, said combining or elementary procedure producing said first result, said uniform cycle furthermore comprising a second row-wise and second column-wise array connection for sending first and second activation signals associated with first and second parameter data for the execution of said algorithm, and means to receive respective second result signals of executing said algorithm on said second parameter data, at least one of said modules constituting an access module of the entire array and comprising a further connection for receiving an external activation signal and external parameter data for said algorithm and for sending an external result signal of executing said algorithm on said external parameter data, wherein any non-first module of an array row has its first row-wise connection attached to the second row-wise connection of the preceding module of the row, and while the first module of any array row has its first row-wise connection attached to the second row-wise connection of the last module of its respective row, wherein any non-first module of an array column has its first columnwise connection attached to the second columnwise connection of the preceding module of that array column, and while the first module of any array column has its first columnwise connection attached to the second columnwise connection of the last module of its respective column.

4,466,065

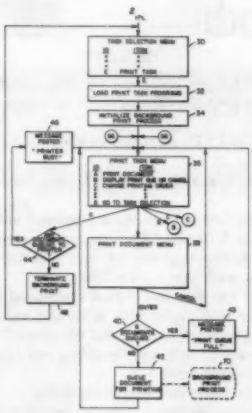
QUEUING CAPABILITY IN A FOREGROUND TASK

Hira Advani, Austin, and John A. Hooten, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1982, Ser. No. 379,067

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—300 **14 Claims**



1. A method for queuing documents to be printed in a foreground task of a word processing system, comprising the steps of:

(a) initializing a print task and a background print process for printing a document;

(b) submitting a document to be printed by entering document identification information in a document print queue;

(c) sequentially printing each document corresponding to document identification information entered in said print queue in step (b) on a first-in, first-out basis;

(d) repeating step (c) by entering document identification information for each additional document to be printed until all documents to be printed have been submitted; and

(e) terminating the print task and the background print process when all submitted documents in step (b) have been printed.

4,466,066

ANTI-LOCKING BRAKE FORCE REGULATING DEVICE

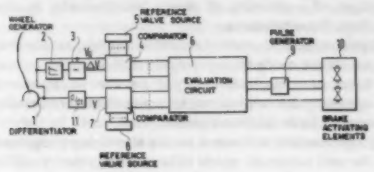
Eckart Saumweber, Gauting; Heinrich Beckmann, and Jens Ottersbach, both of Minden, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,648

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039512

Int. Cl.³ B60T 8/02

U.S. Cl. 364—426 6 Claims



1. An anti-locking brake force regulating device for rail vehicles and the like comprising means responsive to a wheel of a vehicle for generating a signal indicative of the wheel speed, a digital evaluation circuit responsive to said wheel speed signal and to predetermined threshold values for transmitting braking pressure instructions to a brake actuating element, said instructions comprising rapid change of brake pressure, slow change of brake pressure and maintaining brake pressure constant said instructions being such that after instructing a rapid change of brake pressure in response to exceeding a said predetermined threshold value a slow change of brake pressure in the same direction as said rapid change is instructed if the said threshold value is again exceeded and said slow pressure change is initiated by a maintaining brake pressure constant phase whereby a smoother control behavior of the braking operation while protecting against locking is achieved.

4,466,067

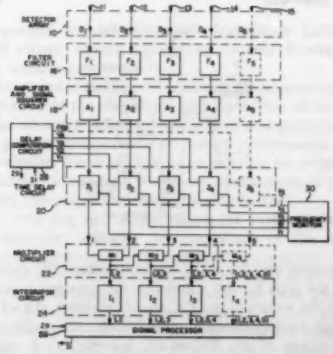
MULTI-DETECTOR INTENSITY INTERFEROMETER AND METHOD FOR PROCESSING INCOHERENT RADIATION SIGNALS

Peter Fontana, Corvallis, Oreg., assignor to State of Oregon, Corvallis, Oreg.

Filed Apr. 3, 1981, Ser. No. 250,855

Int. Cl.³ G01S 3/80

U.S. Cl. 364—460 28 Claims



1. An apparatus for receiving incoherent radiation from a body and for determining, from the received radiation, the location of the body relative to a three-dimensional reference coordinate system comprising:

a detector array of N spaced apart radiation detector means, wherein N is at least four, said detector means being positioned in a predetermined geometric relationship relative to the reference coordinate system, each such detector means comprising means for detecting radiation from the body and for producing a detector output signal corresponding to the radiation it receives;

time-delay means for time-delaying the detector output signals relative to one another to produce at least four time-shifted output signals each time-shifted by a respective delay time and each corresponding to the time-delayed detector output signal of an associated detector means;

multiplier circuit means including means for receiving said time-shifted output signals and for producing at least one multiplier output signal corresponding to the product of said at least four time-shifted output signals;

integrator circuit means for integrating said at least one multiplier output signal to produce a significant integrator output signal when the detector output signals have been time-delayed relative to one another to bring them into correlation;

intensity conversion means for converting signals reaching said integration circuit means into signals corresponding to the intensity of the detected radiation prior to the integration of said at least one multiplier output signal; and

means for determining the set of delay times resulting in a significant integrator output signal and for computing the three-dimensional coordinates of the body from the set of delay times resulting in a significant integrator output signal.

4,466,068

APPARATUS FOR THE DETECTION AND PREVENTION OF COLLISION RISKS IN DEEP SEA AND COASTAL NAVIGATION

Thomas Degré, 32-36 Rue du Borrego, F-75020 Paris; Francois Lefevre, 14 Allée du Chevrefeuilles, 14100 Caen, and Xavier Lefevre, 226 Rue du Faubourg, Saint-Antoine, F-75012 Paris, all of France

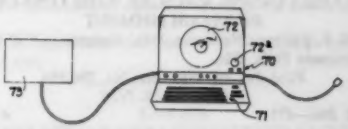
PCT No. PCT/FR80/00087, 371 Date Jan. 31, 1981, 102(e) Date Jan. 26, 1981, PCT Pub. No. WO80/02743, PCT Pub. Date Dec. 11, 1980

PCT Filed May 29, 1980, Ser. No. 232,049

Claims priority, application France, May 31, 1979, 79 14036

Int. Cl.³ G06F 15/50; G01C 21/20; G01S 13/93

U.S. Cl. 364—461 10 Claims



1. In combination an automatic radar plotting aid system and an apparatus for assessing maneuvers as concerns heading and/or speed to be carried out by a first vehicle in order to avoid collision with other vehicles and/or obstacles, said apparatus comprising:

(a) electronic means connected to said aid system for memorizing data input signals provided by said system and representing the coordinate signals and movement parameters of said first vehicle and said others vehicles and/or obstacles;

(b) order signal generating means;

(c) computing means connected to said order signal generating means and said electronic means for computing from said order signals and said memorized signals, the present

velocity vector of said first vehicle and dangerous sectors peculiar to each of said other vehicles and/or obstacles;

(d) visualization means for displaying said present velocity vector and said dangerous sectors on a display means, in order to ascertain:

(i) if said first vehicle would pass at a distance lower than predetermined safety distances, respectively ahead or astern with respect to at least one of said other vehicles and/or obstacles, if the end of the instantaneous speed vector is located within the sector corresponding to said other vehicle and/or obstacle;

(ii) if said first vehicle would pass at a distance higher than or equal to said safety distances ahead or astern with respect to the remaining other vehicles and/or obstacles by checking after a modification of speed and/or heading of said first vehicle if the end of the new velocity vector is loacted outside all the peculiar sectors computed and displayed for said other vehicles and/or obstacles;

(e) said computing means comprising means for calculating for each of said sectors the ends of at least three straight line segments, said visualization means and said computing means comprising means for defining said at least three segments by means of the interesting points of three half lines and a circle the center of which represents said first vehicle and the radius of which is determined by a vector representing maximum velocity of said first vehicle, said at least three half lines being the following:

(i) a half line called collision line resulting from a translation over a distance equal to the present velocity vector of the other vehicle and/or obstacle, of a half line extending between said center and a point representing said other vehicle and/or obstacle, whereby said first vehicle will run into said other vehicle and/or obstacle if the end of its present velocity vector coincides with a point of said collision line;

(ii) a half line called ahead passage line having the same origin as said collision half line and making an angle therewith the sinus of which equals the quotient of said safety distance ahead and of the present distance between said first vehicle and said other vehicle and/or obstacle;

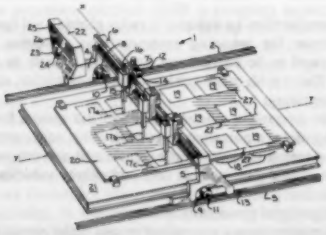
(iii) a halfline called astern passage line having the same origin as said collision half line and making an angle therewith, the sinus of which equals the quotient of said safety distance astern and of the present distance between said first vehicle and said other vehicle and/or obstacle.

4,466,069

FLAME CUTTING MACHINE WITH LOST CUT RE-ESTABLISHMENT

Fredrick J. Balfanz, Waukesha, Wis., assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed Jul. 24, 1981, Ser. No. 286,556
Int. Cl.³ B23K *7/10*
U.S. Cl. 364—475 **4 Claims**



2. A computerized numerically controlled flame cutting machine for cutting a plurality of pieces from a plate-like workpiece, comprising in combination:

(a) a bridge mounted for movement along a Y axis,

(b) a plurality of carriages ganged together on said bridge for movement along an X axis,

(c) flame cutting torches mounted to said carriages for cutting said workpiece,

(d) motive means for moving said bridge and carriages along their respective axes,

(e) programmable numerical control means for actuating said motive means and said torches to cut a plurality of rows of a plurality of pieces automatically in sucession from the workpiece,

(f) said numerical control means being programmed with an automatic mode to sequentially initially position each said torch at a start-pierce point on the workpiece and to complete the original cut of a piece at a termination point spaced from said start-pierce point,

(g) said numerical control means also being programmed in the said automatic mode to sequentially move said torches automatically from the respective termination points to the next row of pieces to be cut,

(h) first selectively actuatable means to interrupt the automatic mode sequencing of said programmable numerical control means to cause said torches to automatically move from their respective termination points in the row of cut pieces and directly to their respective start-pierce points in said last-named row for subsequent re-establishment of one or more cuts,

(i) second selectively actuatable means to interrupt the automatic mode sequencing of said programmable numerical control means to cause said torches to move in a reverse cutting direction from the respective termination points in the row of cut pieces and to the commencement portion of a lost cut,

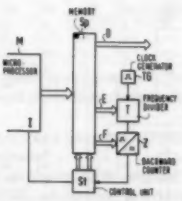
(j) and third selectively actuatable means to actuate the normal forward automatic sequencing of said programmable control means to cause said torches to retrace their original cutting path subsequent to reaching the said commencement portion of a lost cut.

4,466,070

CONTROL UNIT WITH DIGITAL ADDRESSING MEMORY FOR A DC-TO-AC INVERTER

Ulf Claussen, Wedel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,248
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115612
Int. Cl.³ H02P *13/20*; H02M *1/08*
U.S. Cl. 364—480 **3 Claims**



1. A control unit for a DC-to-AC inverter, the control unit being of the type having a memory for containing addressing tables for the values of the DC-to-AC inverter, the addressing tables each corresponding to a predetermined amplitude of the output voltage of the DC-to-AC inverter, each addressing table having portions of information corresponding to respective addressing combinations and timing information, the control unit further having a variable frequency oscillator con-

nected to a counter for controlling periodic scanning of the memory, the control unit further comprising:

microprocessor means for loading a variety of addressing tables into the memory, the addressing tables corresponding to predetermined ranges of frequency and amplitude of the output voltage of the inverter;

clock generator means contained in the variable frequency oscillator for producing a clock signal;

frequency divider means connected to said clock generator means and having an input terminal for receiving a division factor value from the memory, said division factor corresponding to a predetermined frequency of the output voltage of the inverter, said division factor value being inversely proportional to said predetermined frequency.

counter means connected to an output of said frequency divider means and having a presetting input connected to the memory for receiving a presetting value, and time information, said time information corresponding to a number of clock pulses at said output of said frequency divider means for which an associated addressing combination is to be preset; and

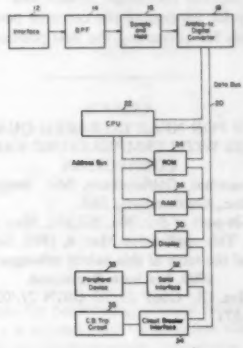
control means for addressing the memory in response to an output signal from said counter means.

4,466,071

HIGH IMPEDANCE FAULT DETECTION APPARATUS AND METHOD

B. Don Russell, Jr., Bryan, Tex., assignor to Texas A&M University System, College Station, Tex.

Filed Sep. 28, 1981, Ser. No. 306,304
Int. Cl.³ G01R *31/02*
U.S. Cl. 364—492 **18 Claims**



6. Apparatus for detecting high impedance faults on an electrical circuit having alternating current flowing therethrough, which comprises:

means coupled to the electrical circuit for generating a signal indicative of the magnitude and waveform of the current in the circuit, and for removing from said generated signal the portion indicative of frequency components below a preselected frequency, so as to provide an output signal indicative of the high frequency components of the alternating current in the electrical circuit; and

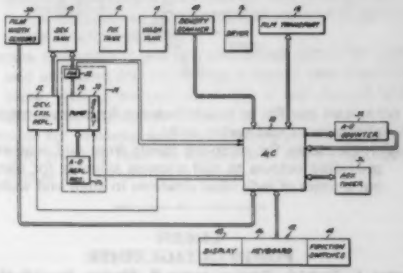
means receiving said output signal, for evaluating the same to determine whether the magnitude of the high frequency components of the alternating current in the electric circuit is above a prescribed level, and after determining that said components are above the prescribed level, for evaluating said output signal to further determine whether the magnitude of the high frequency components of the alternating current in the electric circuit remains above the prescribed level for at least a prescribed minimum number of cycles of the alternating current, thereby determining the existence of a high impedance fault condition on the electrical circuit.

4,466,072

AUTOMATIC FIXED-QUANTITY/FIXED-TIME ANTI-OXIDATION REPLENISHER CONTROL SYSTEM

Kenneth M. Kaufmann, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Nov. 16, 1981, Ser. No. 321,619
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.³ G03D *3/06*; G05D *11/00*
U.S. Cl. 364—502 **7 Claims**



1. A method of controlling anti-oxidation replenishment in a processor of photosensitive material, the method comprising:

(a) initiating a time interval of predetermined duration;

(b) providing exhaustion replenishment during the time interval as a function of use of processor fluid;

(c) providing a first replenishment signal indicative of an accumulated amount of anti-oxidation replenishment supplied as a result of the exhaustion replenishment during the time interval;

(d) providing a second replenishment signal indicative of an amount of anti-oxidation replenishment required during the time interval as a function of a stored anti-oxidation replenishment rate;

(e) comparing the first and second replenishment signals at the end of the time interval;

(f) providing a predetermined amount of anti-oxidation replenishment at the end of the time interval if a difference by which the second replenishment signal is greater than the first replenishment signal exceeds a preset value, and providing no anti-oxidation replenishment at the end of the interval if the second replenishment signal exceeds the first replenishment signal by less than the preset value; and

(g) initiating another time interval in which steps (b)-(g) are repeated.

4,466,073

WAFER PREALIGNER USING PULSED VACUUM SPINNERS

Gerard E. Boyan, Redding, and Enso J. Maleri, Bridgeport, both of Conn., assignors to The Perkin Elmer Corporation, Norwalk, Conn.

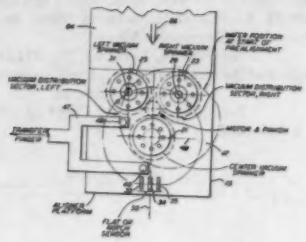
Filed Apr. 26, 1982, Ser. No. 371,402
Int. Cl.³ B65G *47/24*, *51/02*
U.S. Cl. 364—559 **8 Claims**

1. An apparatus for prealinging a circular wafer comprising:

(a) an aligner platform having defined thereon X and Y axes and a standardized reference X, Y and rotational orientation for a wafer; said wafer having a flat or notch formed in the periphery thereof,

(b) a first vacuum spinner, first means supporting said vacuum spinner for rotation in said platform about the intersection of the X and Y axes;

(c) at least second and third spinners, second means supporting said second and third spinners for rotation in said platform, displaced from said intersection of said axes;
(d) at least two edge sensors for sensing the required wafer edge location at two points separated from each other;



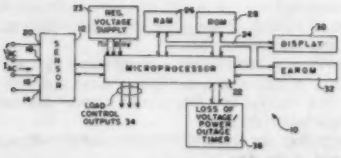
(e) at least one flat or notched sensor for sensing rotational alignment of said wafer; and
(f) logic means for receiving inputs from said sensors and providing outputs to said vacuum spinners for carrying out a series of individual rotations to align said wafer.

4,466,074

POWER OUTAGE TIMER

James A. Jindrick, Racine; James R. Hurley, Brookfield, and Clyde Gilker, S. Milwaukee, all of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 18, 1981, Ser. No. 303,599
Int. Cl.³ G04F *10/00*
U.S. Cl. 364—569 **7 Claims**



1. In an electronic watt-hour meter operated by a microprocessor and having connected thereto a real time value electrically alterable read only memory and a real time clock signal input, the improvement comprising:
a power outage/loss of voltage timing means, coupled to the microprocessor, for generating a signal after power is restored to said microprocessor following a power outage, such signal being indicative of the time duration of the power outage when the watt-hour meter was inoperative and being input to the microprocessor so that the microprocessor updates the real time value in the electrically alterable read only memory to reflect the correct real time in the memory.

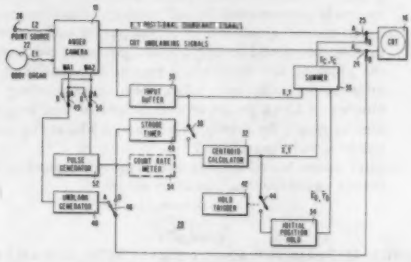
4,466,075

MOTION CORRECTION CIRCUITRY AND METHOD FOR A RADIATION IMAGING DEVICE

Mark W. Groch, Elk Grove Village, and James T. Rhodes, Naperville, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 23, 1981, Ser. No. 324,090
Int. Cl.³ G01T *1/20*
U.S. Cl. 364—571 **12 Claims**

1. Motion correction circuitry for correcting the motion due to patient's movement in a radiation imaging device, comprising:
(a) a transducer for producing electrical pulses in response to quanta of radiation impinging on the transducer derived from a first radiation substance associated with the patient's body having energies within a first specified energy range, and a second radiation substance associated with the patient's body having energies within a second specified energy range;
(b) circuitry for processing the electrical transducer pulses to develop
(b1) first positional coordinate signals corresponding to quanta of radiation having energies within the first specified range; and



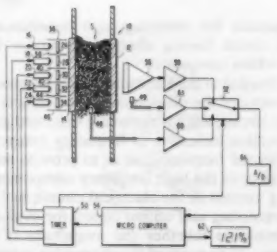
(b2) second positional coordinate signals corresponding to the quanta of radiation having energies within the second specified range;
(c) circuitry for processing the second positional coordinate signals to develop centroid positional coordinate signals corresponding to the mean position of a plurality of the second positional coordinate signals; and
(d) circuitry for processing the centroid positional coordinate signals for correcting the first positional coordinate signals.

4,466,076

APPARATUS FOR NEAR INFRARED QUANTITATIVE ANALYSIS WITH TEMPERATURE VARIATION CORRECTION

Robert D. Rosenthal, Gaithersburg, Md., assignor to Trebor Industries, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 263,881, May 15, 1981, Pat. No. 4,404,642. This application Mar. 8, 1982, Ser. No. 355,325
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ G06F *15/20*; G01N *21/00*
U.S. Cl. 364—571 **8 Claims**



1. An apparatus for near infrared quantitative analysis providing for correcting wide temperature variations of sample, the apparatus comprising:
(a) means for holding a sample to be analyzed including at least a portion of a wall thereof being transparent to infrared energy,

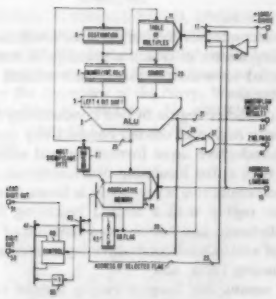
(b) means to transmit infrared energy toward a sample in the holding means,
(c) a plurality of narrow bandpass filters between the means to transmit infrared energy and the sample holding means to produce desired wavelengths required for quantitative analysis,
(d) sensor means positioned to receive and sense infrared energy transmitted through a sample to be analyzed contained in the holding means, said sensor means producing a signal related to the infrared energy received thereby,
(e) sample temperature measuring means positioned in the sample holding means to measure the temperature of a sample therein and to produce a signal related thereto,
(f) computer means for receiving the signals from the sensor means and sample temperature measuring means and combining them in multiple regression equations to compensate for variations in sample temperature, and
(g) means for reading out the results of the analysis from the computer means.

4,466,077

METHOD AND APPARATUS FOR DIVISION EMPLOYING ASSOCIATIVE MEMORY

Robert A. Iannucci, Quincy, Mass., and James R. Kleinstelber, Glen Aubrey, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,765
Int. Cl.[3] G06F *7/52, 7/544*
U.S. Cl. 364—767 9 Claims



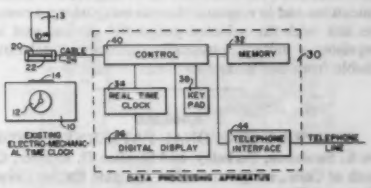
5. Apparatus for performing division wherein a digit value multiplied by a denominator value is less than or equal to a numerator or intermediate result, comprising:
generating means for generating a table of multiples by multiplying the denominator value by successive integer multipliers starting with unity;
means for storing the multiples generated by said generating means;
an associative memory array;
means, connected to said generating means, for storing the most significant byte of the multiples in the associative array;
means, connected to said associative array, for sequentially comparing the most significant byte of the numerator or intermediate result with each entry in the associative array to find a selected entry which is less than or equal to the most significant byte of the numerator or intermediate result;
means, connected to said comparing means, for detecting the multiplier corresponding to the largest most significant byte satisfying the comparison;
means responsive to said detected multiplier for selectively addressing said table of multiples for the corresponding multiple;
subtracting means for subtracting the selected multiple from the numerator or intermediate result;
means for storing the result of said subtraction;
first means, connected to said subtracting means, for detecting underflow;
second means, responsive to said detected multiplier, for determining if said detected multiplier corresponds to the largest multiple in the table of multiples;
means, responsive to said first and second means, for storing the detected multiplier as an intermediate quotient if said first means detects no underflow and if said second means detects no correspondence;
means, responsive to said first means, for decrementing said detected multiplier and for storing said decremented detected multiplier as an intermediate quotient if said first means detects underflow;
means, responsive to said first and second means, for storing said multiplier and for forcing a second pass if said first means detects no underflow and if said second means detects correspondence; and
means, for summing said stored multiplier with the multiplier resulting from the second pass, and for storing the sum as an intermediate quotient.

4,466,078

AUTOMATED TIME RECORD PROCESSING SYSTEM

Alfred A. Treiman, 1519 Easterly Ter., Los Angeles, Calif. 90026

Filed Jul. 31, 1980, Ser. No. 174,237
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—900 5 Claims



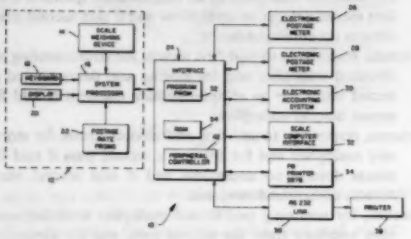
1. In combination with a standard electromechanical time clock having an opening therein for receiving a machine readable time card comprising coded identification information, an apparatus for recording the card identification information and associated time information, comprising:
card reader means for reading said machine readable card indentification information contained on said card inserted through the card reader means into the time clock, said card reader means being removably mounted over said standard time clock opening in registration therewith;
data processing means located externally of said standard time clock for:
(1) converting the card identification information read by the said card reader means into storable data signals,
(2) generating associated time signals representing insertion time of said card into said card reader, and
(3) storing said card identification data signals and associated time signals in a data storage means to permit delayed demand readout thereof; and
means electrically coupling said card reader means to said data processing means.

4,466,079

MAILING SYSTEM PERIPHERAL INTERFACE WITH COMMUNICATIONS FORMATTING MEMORY

Edward P. Daniels, Bridgeport; Daniel F. Dlugos, Huntington, and Flavio M. Manduley, Woodbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,252
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 7 Claims



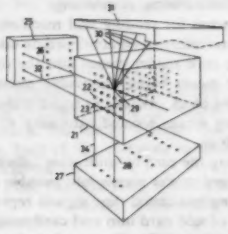
1. An interface for transmitting a postage value signal between a mailing system processor and a plurality of mailing system peripheral devices, the interface comprising a peripheral interface controller and means operatively interconnecting the controller and the peripheral devices, the interface further comprising system processor program memory means, the program memory means consisting essentially of a plurality of memory storage locations storing information for formatting communications between the system processor and the peripheral devices at selected memory storage locations, the system processor including means for addressing the selected memory storage locations and means for retrieving the communications formatting information stored at such locations, the system processor formatting communications for a selected peripheral device in accordance with the retrieved formatting information and transmitting such formatted communications to the controller, the controller receiving such formatted communications and in response thereto establishing a communications link with the selected peripheral device, said interface comprising a unitary, physically distinct unit selectively detachable from said processor.

4,466,080

THREE-DIMENSIONAL PATTERNED MEDIA

Wyn K. Swainson, Berkeley, and Stephen D. Kramer, Oakland, both of Calif., assignors to Formigraphic Engine Corporation, Sarasota, Fla.

Continuation-in-part of Ser. No. 544,480, Jan. 27, 1975, Pat. No. 4,078,229. This application Apr. 15, 1981, Ser. No. 254,359
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—106 4 Claims



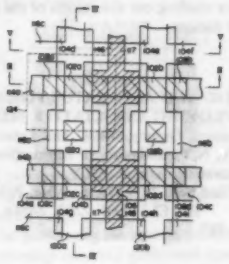
1. A medium for forming a substantially persistent three-dimensional figure comprising: a substantially transparent dispersion medium capable of maintaining a relatively stable shape containable within a volume; and a first reactant substantially dispersed in said dispersion medium, said first reactant being responsive to energy level changes within said volume at selected locations therein, so as to produce a catalytic agent; and a reactive second component capable of producing said figure by the influence of said catalytic agent.

4,466,081

SEMICONDUCTOR MEMORY DEVICE

Fujio Masuoka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 320,935
Claims priority, application Japan, Dec. 8, 1980, 55/172914; Dec. 8, 1980, 55/172918; Dec. 20, 1980, 55/180950
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—218 15 Claims



1. A semiconductor memory device comprising:
a memory matrix in which a plurality of memory cells are arranged in a matrix form, each of said memory cells including:
a semiconductor region of first conductivity type having an impurity region of second conductivity type,
a first conductive layer formed on said semiconductor region with a first insulating film interposed therebetween,
a second conductive layer which is formed on said semiconductor region with a second insulating film interposed therebetween and which has a function of storing data, a part of said second conductive layer overlapping said first conductive layer, and
a third conductive layer which is formed on said second conductive layer with a third insulating film interposed therebetween and which is insulated from said first and second conductive layers;
an erase line connected to said first conductive layer of each of said memory cells; and
voltage supplying means for supplying a data erase voltage to said erase line to erase the data.

4,466,082

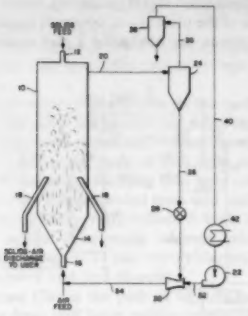
APPARATUS FOR MIXING AND DISTRIBUTING SOLID PARTICULATE MATERIAL

Robert J. Zoschak, Rutherford, and Bimal K. Biswas, Union, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 2, 1982, Ser. No. 345,120
Int. Cl.³ B01F *13/02*
U.S. Cl. 366—101 15 Claims

1. An apparatus for mixing and distributing solid particulate material, said apparatus comprising a vessel for supporting a bed of said material, inlet means associated with said vessel for receiving additional material for said bed, means for introducing a pressurized gas into the lower portion of said vessel at a velocity sufficient to pass through the central portion of said bed and cause a spouting of said particles from the upper surface of said bed and forming a central zone in which the

concentration of particles in the gas is relatively low and said particles move upwardly with the gas, and an outer zone surrounding said central zone in which the concentration of said particles is relatively high and their general movement is downwardly, a plurality of outlets disposed in a spaced relation around said vessel and communicating with said outer zone for



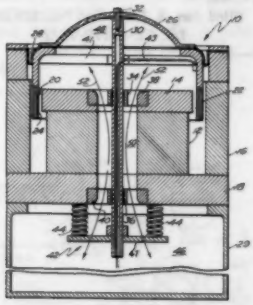
permitting said mixed material to discharge from a plurality of areas of said vessel, outlet means for permitting said gas to discharge from the upper portion of said vessel, means connected to said gas outlet means for separating from said gas the solid particles entrained in said gas and means for injecting said solid particles back into said bed.

4,466,083

LOW FREQUENCY, BROADBAND, UNDERWATER SOUND TRANSDUCER

Bernard S. Willard, Ft. Lauderdale, and Robert K. Judd, Dania, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1983, Ser. No. 499,720
Int. Cl.³ H04R *11/00*
U.S. Cl. 367—175 **6 Claims**



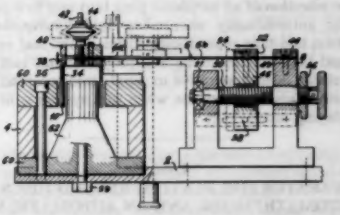
1. An underwater electrodynamic transducer comprising:
a magnetic circuit including a magnet having a central aperture, pole pieces located at both axial ends of said magnet and said pole pieces extending outward radially from said magnet, said magnet and pole pieces being arranged to form a magnetic air gap, said magnet, said central aperture, said pole pieces and said magnetic gap all being arranged so as to have a common axis;
a moving coil rectangular in cross said magnetic air gaps, said rectangular coil having its long dimension perpendicular to the motion of said coil;
a piston skirt holding said moving coil;
a beryllium copper piston dome and a beryllium copper skirt spider connected to said piston skirt and holding said piston skirt and said conductor coil within said magnetic air gap;
a flexible rubber seal connecting between an axial extension of said pole piece that is located outward radially from said magnet and said piston components for inhibiting seawater from entering said transducer;
a centering shaft connected to said piston dome, said centering shaft having an aperture extending at least part way through the shaft, said centering shaft having said common axis and arranging said piston dome, said piston skirt and said coil to have said common axis;
alignment means for restricting the motion of the shaft to a straight line along said common axis, said alignment means includes linear bearing affixed to said magnetic circuit by respective bearing holders and said skirt spider located between said piston skirt and said shaft;
a spring assembly connecting said shaft to said magnetic circuit; and
a housing piece connected to and extending from said magnetic circuit; said housing piece forming a chamber having an air mass and having said common axis and a portion of said housing piece being located radially outward of said spring assembly.

4,466,084

SEISMOMETER

Ghislain Claque, Etampes, and André Meesters, Verrieres-le-Buisson, both of, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 13, 1981, Ser. No. 253,289
Claims priority, application France, Apr. 15, 1980, 80 08409
Int. Cl.³ G01C *1/42*; G01P *15/09*
U.S. Cl. 367—182 **11 Claims**



1. A seismometer comprising a permanent magnet fixed to a supporting plate, a thin flexible blade, the fixed end of which is embedded in a blade securement means fixed to said supporting plate, and the free end of which carries a coil which is freely movable in the air gap of said permanent magnet and an additional mass for balancing the weight of the coil in such a way that the center of gravity of the oscilatting unit formed by said coil and said additional mass is located substantially on the axis of the profile of said flexible blade, and an electronic amplifying means which amplifies the electromotive forces induced in the coil by movement of said coil in the air gap of said magnet, wherein the position of said additional mass is adjustable and wherein the profile of said flexible blade has a predetermined thickness along a predetermined length of the blade portion forming the loop of said blade nearest to the end of said blade corresponding to the first partial vibration mode, with the remainder of the profile having a thickness less than said predetermined thickness.

4,466,085

TAPE REPRODUCING APPARATUS COMBINED WITH A RADIO SET

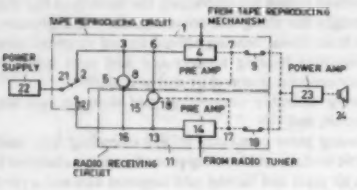
Yasunobu Tsuchiya, and Kyuichiro Tominaga, both of Saitama, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1981, Ser. No. 314,724

Claims priority, application Japan, Oct. 27, 1980, 55-152125[U]

Int. Cl.³ G11B *31/00*

U.S. Cl. 369—10 **10 Claims**



1. In an automobile radio receiver and tape playing system powered from an electrical power source and having tape reproducing means for supplying electrical tape signals from a tape cassette accepting means, radio signal receiving means for supplying signals from the radio receiver, loudspeaker means coupled to said tape reproducing means and said receiving means, and cassette-insertion responsive first switching means operable by insertion of a cassette into said cassette accepting means from a first switching condition establishing a normal radio mode and supplying only said receiver signals to said loudspeaker means to a second switching condition establishing a tape playing mode and supplying only said tape signals to said loudspeaker means, said first switching means reverting to said first switching condition upon withdrawal of said cassette from said cassette accepting means, the improvement comprising:

first earphone jack means coupled to said tape reproducing means for supplying said tape signals to an earphone plug inserted therein, and second switching means responsive to insertion of an earphone plug into said first jack means for automatically uncoupling said loudspeaker means from said tape reproducing means when said system is in said tape playing mode and for rendering said radio receiving means operative to supply said received signals to said loudspeaker means when said system is in said tape playing mode.

4,466,086

APPARATUS FOR PLAYING RECORD DISCS IN AN AUTOMATIC MODE AND AN AUTOMATIC MUSIC PIECE SELECTION MODE

Tsuyoshi Ono, and Fumiaki Oono, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 29, 1981, Ser. No. 278,112

Claims priority, application Japan, Jul. 2, 1980, 55-93226[U]

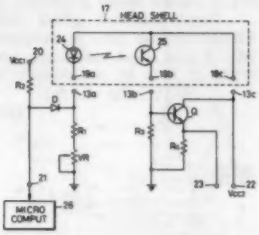
Int. Cl.³ G11B *3/30, 17/02, 21/26*

U.S. Cl. 369—32 **6 Claims**

1. An automatic record disc playing apparatus comprising:

a tone arm having a connection part onto which a normal head shell having a plurality of terminals for transmitting signals which are picked up by a pickup cartridge and a head shell for automatic music piece selection play are selectively mounted, said head shell for automatic music piece selection play having detection means for detecting the sound groove portions and the land portions between adjacent music pieces, a plurality of terminals exclusively for said detection means, and a plurality of terminals for transmitting signals picked up by a pickup cartridge, said tone arm having a plurality of signal transmitting terminals which are connected to the terminals for transmitting signals of said normal head shell and said head shell for automatic music piece selection play, and a plurality of terminals exclusively for the detection means which are connected to the terminals exclusively for the detection means of said head shell for automatic music piece selection play;

play mode changeover signal producing means connected to at least one of the plurality of terminals exclusively for the detection means, for producing a play mode changeover



signal as an output in states where the terminals exclusively for the detection means of said head shell for automatic music piece selection play and said tone arm are respectively connected to each other or not connected; and

means for urging said tone arm to perform an automatic music piece selection play operation and a normal play operation according to the play mode changeover signal produced by said play mode changeover signal producing means.

4,466,087

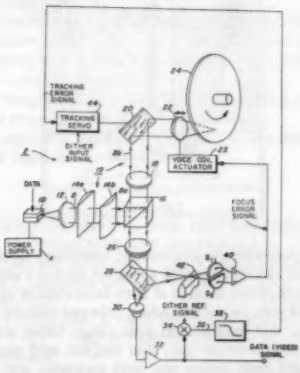
OPTICAL MEMORY SYSTEM FOR A READING/WRITING, VERIFYING AND TRACKING MODULE

David Cheng, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1981, Ser. No. 223,200

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **5 Claims**



1. An optical memory system wherein information is recorded and read back from a recording media (**24**), said memory system including an optical system to record on and read back from said recording media, comprising:

a light source (**10**), said light source being driven at a higher power level to record said information on said recording

media and being driven at a lower power level to read back information recorded on said recording media,

a retro-reflecting optical path (19) including means for reflecting (16, 20), and directing (22) the light beam to the recording media in the write mode and for directing and reflecting the light beam to and from the recording media in the read mode, said means for reflecting and directing the light beam including:

a beam splitter means (16) for receiving the light from the light source (10) and reflecting all of said light in a first direction,

galvanometer mirror means (20) in the path of said light reflected in said first direction for reflecting said light in a second direction toward said recording media (24),

lens means (22) in the path of said light reflected in said second direction for focusing said light onto said recording media, the light reflected from said recording media in a read mode being retro-reflected back along the same path as in the write mode wherein said beam splitter means (16) passes all of said retro-reflected light further in the reverse of said first direction,

second means (26) in the path of light in said reverse first direction from said beam splitter means (16) for focusing said light,

electro-optic detector means (30) at the focal point of said light for generating a data electrical signal in response to the light impinging upon it,

second beam splitter means (28) between said lens means (26) and said electro-optic detector means (30) for reflecting part of the light from said first mentioned beam splitter means (16) in a third direction, and

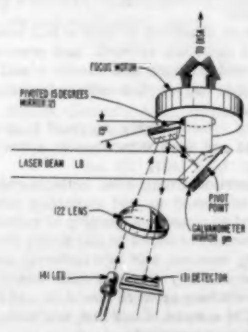
complementary electro-optic detector means (S1, S2) in the path of light reflected in said third direction for generating a focus error signal, said focus error signal being applied to said first mentioned lens means (22) for maintaining the focus of said light beam on said recording media (24).

4,466,088

GALVO POSITION SENSOR FOR TRACK SELECTION IN OPTICAL DATA DISK SYSTEM

Paul M. Trethewey, Tarzana, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 21, 1981, Ser. No. 332,496
Int. Cl.[3] G11B *7/00*
U.S. Cl. 369—46 **22 Claims**



1. In an optical data disk system where a radiant energy information laser beam of prescribed first wavelength is to be selectively positioned by rotatable scan-mirror means, the mirror means being arranged to provide a laser-reflecting mirror surface highly reflective of said laser information beam, and where rotation monitor means is provided to automatically monitor the angular orientation of said mirror means, and provide an output signal reflecting this, said monitor means comprising, in cooperative combination:

reflector means operatively associated with said mirror means to be rotated conjunctively therewith;

source means for providing a radiant energy monitor beam of prescribed second wavelength, being adapted to project this beam to be reflected by said reflector means;

detector means including active extended surface means adapted and disposed to receive said monitor beam whereby the angular rotation of said mirror means is converted to a prescribed linear displacement across this surface means so as to generate position signals representing the relative position of the monitor beam on the surface means; and

utilization means adapted to process said position signals and generate said output signal for use in positioning said information beam; the utilization means including amplifying/processing circuit means disposed to be electromagnetically shielded by said detect means and/or said source means;

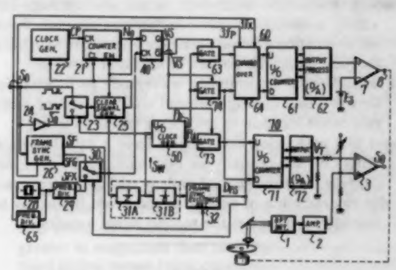
said mirror means additionally including reflector means disposed opposite thereto and adapted to reflect said monitor beam from said source means to said detector means so as to represent the angular rotation of said mirror surface during scanning of said laser beam as prescribed linear displacement on said detector surface means.

4,466,089

INFORMATION SIGNAL REPRODUCING APPARATUS

Shigeaki Wachi, Kurume, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,816
Claims priority, application Japan, Jun. 30, 1981, 56-101691
Int. Cl.[3] G11B *17/00, 5/00*
U.S. Cl. 369—59 **12 Claims**



1. An information reproducing apparatus comprising:

a disc having recorded thereon an information signal which is modulated by a run length limited code;

means for reproducing said information signal from said disc;

a motor for rotating said disc;

a comparator for comparing a level of said reproduced information signal with a threshold voltage to produce a continuous rectangular wave form signal;

detecting means for detecting an interval of a positive polarity part of a transition interval in said rectangular wave form signal and an interval of a negative polarity part of the transition interval in said rectangular wave form signal;

a clock pulse generating source;

up-down counter means connected to said clock pulse generating source for counting clock pulses during a predetermined transition interval such that the content of said counter means changes in one direction when the interval of said positive polarity part is greater than said predetermined interval and that the content of said counter means changes in an opposite direction when the interval of said negative polarity part is greater than said predetermined interval; and

a digital-to-analog (D/A) converter for converting a digital

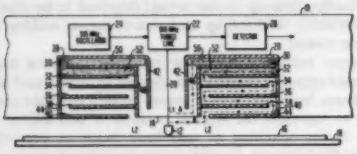
signal supplied from said up-down counter means to a corresponding analog signal fed to said comparator as said threshold voltage, thereby to produce a signal having equal intervals of positive and negative polarity parts in said transition interval.

4,466,090

RADIAL TRANSMISSION CANCELLATION DEVICE

Bruce F. Bogner, Mt. Holly, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,689
Int. Cl.³ H04N 5/83; G11B 9/06
U.S. Cl. 369—126 **9 Claims**



1. In a record playback system of the type having a substantially enclosed conductive arm carriage for supporting and translating a stylus/stylus arm assembly during playback, said carriage being operatively positioned above said record, said carriage having an opening in the bottom thereof to permit selective stylus/record engagement, said player including an oscillator providing a signal at a given frequency, the apparatus comprising:

means attached to the bottom of said arm carriage for providing a radial transmission waveguide path from one radial location near said carriage opening to another radial location along the bottom of said arm carriage;

a second radial transmission waveguide path being formed between said carriage bottom and said record from said one radial location to said other radial location;

said first path being arranged to have a path length which differs by substantially an odd multiple of 180 electrical degrees from the second path at said given frequency;

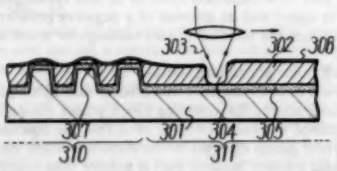
whereby radiation of energy at said given frequency is substantially reduced at the second radial location.

4,466,091

OPTICAL RECORD DISC

Toshihiko Takagi; Yoshikazu Kobayashi; Yoshihide Arakawa, all of Kawasaki; Yoshiji Suzuki, and Tsutomu Hara, both of Hamamatsu, all of Japan, assignors to Nippon Columbia KabushikiKaisha, Tokyo, Japan

Filed Oct. 22, 1981, Ser. No. 313,764
Claims priority, application Japan, Oct. 27, 1980, 55-150382; May 21, 1981, 56-77100
Int. Cl.³ G11B 7/24
U.S. Cl. 369—275 **8 Claims**



1. An optical record disc, comprising:

(a) a base plate having a blank portion of substantially uniform thickness and a guide signal pit portion of projections extending upwardly from one surface of said base plate;

(b) a light reflecting film layer on said one surface of said base plate coating, said blank portion and said guide signal pit portion; and

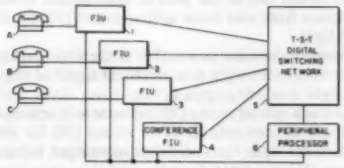
(c) a thin layer of recording material of the removing type coated on said reflection film layer, said recording material having a high light absorption factor, a substantially uniform thickness over said blank portion and a thickness over the top sections of said projections substantially smaller than over said blank portion.

4,466,092

TEST DATA INSERTION ARRANGEMENT FOR A CONFERENCE CIRCUIT

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 27, 1982, Ser. No. 453,268
Int. Cl.³ H04Q 11/04
U.S. Cl. 370—13 **10 Claims**



1. In a Time-Space-Time switching system, a test data insertion arrangement for use in a time shared conference circuit, said test data insertion arrangement comprising:

a plurality of switching system subscribers including a first, a second and a third subscriber;

said switching system including:

a Time-Space-Time digital switching network being operable to transfer PCM voice data samples in particular time slots;

a plurality of interface units, each said interface unit connected between at least one said subscriber and said switching network, each said interface unit being operated to generate and to transfer said PCM voice data samples of said connected subscribers between said switching network and said subscribers in said particular time slots;

processor means connected to each of said interface units and to said switching network, said processor means being operated to control said transfer of said voice data and test data to said interface units and to said switching network; and

said switching network being operated to connect said first, second and third subscribers in a conference arrangement;

said test data insertion arrangement further comprising:

timing means connected to said switching network and being operated to generate a plurality of periodic pulses;

first buffering means connected to said timing means and to said switching network, said first buffering means being operated to sequentially store said voice data of said three consecutive switching network time slots, said three voice data being PCM samples of said first, said second and said third subscribers, respectively;

second buffering means connected to said timing means and to said first buffering means, said second buffering means being operated to simultaneously store said three voice data of said first buffering means;

said first buffering means being further operated to store a voice data sample of a next time slot, said voice data sample of said next time slot being a PCM sample of a first other subscriber in a second conference arrangement;

first gating means connected to said second buffering means

and to said timing means, said first gating means being operated to transmit two voice data samples of said stored three voice data samples, during each said successive time slot;

first comparing means connected to said first gating means and being operated to determine which of said two transmitted voice data samples is greater in magnitude;

second comparing means connected to said first gating means and being operated to determine whether said two transmitted voice data samples are greater in magnitude than a predefined threshold level;

second gating means connected to said second comparing means and being operated to determine whether at least one of said two transmitted voice data samples is greater in magnitude than said threshold level and being further operated to generate a first signal in response to said determination;

third gating means connected to said second gating means and to said first comparing means, said third gating means being operated to generate a second signal of a first value for selecting said voice data sample of greater magnitude, which is greater in magnitude than said threshold level, and said third gating means being operated to generate a second signal of a second value for said two transmitted voice data samples being less in magnitude than said threshold level;

memory means connected to said timing means and to said third gating means, said memory means being operated in response to said second signal of said second value to generate a third signal for indicating which said voice data sample of an identical time slot of the preceding time frame is greater in magnitude;

said third gating means further operated in response to said third signal to generate said second signal of said first value;

said memory means being further operated to store said second signal of a first value for use during an identical time slot of a next successive time frame;

multiplexing means connected to said second buffering means through said first gating means and connected to said third gating means, said multiplexing means being operated in response to said second signal of said first value to transmit said selected voice sample of greater magnitude to said switching network; and

means for inserting connected to processor means, to said timing means and to said multiplexing means, said means for inserting being operated to store said test data of said processor means and to transmit said stored test data during a predetermined time slots to said switching network via said multiplexing means.

4,466,093

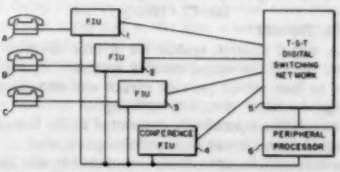
TIME SHARED CONFERENCE ARRANGEMENT

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 27, 1982, Ser. No. 453,266

Int. Cl.³ H04J 3/02

U.S. Cl. 370—62 **18 Claims**



1. In a Time-Space-Time switching system, a time shared conference arrangement comprising:

a plurality of switching system subscribers including a first, a second and a third subscriber;

said switching system having a Time-Space-Time digital switching network connected to each said subscriber and said network being operated to connect said first, second and third subscribers in said conference arrangement by transferring PCM voice data samples of said subscribers in three consecutive time slots;

timing means connected to said switching network and being operated to generate a plurality of periodic pulses;

first buffering means connected to said timing means and to said switching network, said first buffering means being operated to sequentially store said voice data samples of said three consecutive switching network time slots, said three voice data being PCM samples of said first, said second and said third subscribers, respectively;

said time shared conference arrangement being serially operated during a successive time slot:

second buffering means connected to said timing means and to said first buffering means, said second buffering means being operated to simultaneously store said three voice data samples of said first buffering means;

said first buffering means being further operated to store said voice data sample of a next time slot of said switching network time slots, said voice data of said next time slot being a PCM sample of a first other subscriber in a second conference arrangement;

first gating means connected to said second buffering means and to said timing means, said first gating means being operated to transmit two voice data samples of said stored three voice data samples, during each said successive time slot;

first comparing means connected to said first gating means and being operated to determine which of said two transmitted voice data samples is greater in magnitude;

second comparing means connected to said first gating means and being operated to determine whether said two transmitted voice data samples are greater in magnitude than a predefined threshold level;

second gating means connected to said second comparing means and being operated to determine whether at least one of said two transmitted voice data samples is greater in magnitude than said threshold level, and said second gating means being operated to generate a first signal in response to said determination;

third gating means connected to said second gating means and to said first comparing means, said third gating means being operated to generate a second signal of a first value in response to said first signal for selecting said voice data sample of greater magnitude which is greater in magnitude than said threshold level and said third gating means being operated to generate a second signal of a second value for said two transmitted voice data samples being less in magnitude than said threshold level;

memory means connected to said timing means and to said third gating means, said memory means being operated in response to said second signal of said second value to generate a third signal for indicating which said voice data sample of an identical time slot of the preceeding time frame is greater in magnitude;

said third gating means being further operated in response to said third signal to generate said second signal of said first value;

said memory means being further operated to store said second signal of a first value for use during an identical time slot of a next successive time frame;

said time shared conference arrangement being further serially operated during a next successive time slot:

multiplexing means connected to said second buffering means through said first gating means and connected to said third gating means, said multiplexing means being operated in response to said second signal of said first value to transmit said voice sample of greater magnitude to said switching network; and

said first buffering means being simultaneously operated with said multiplexing means to store said voice data

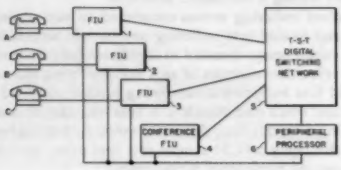
sample of a second next time slot of said switching network time slots, said voice data sample being a PCM sample of a second other subscriber in said second conference arrangement.

4,466,094

DATA CAPTURE ARRANGEMENT FOR A CONFERENCE CIRCUIT

Robert E. Renner, Glendale, Ariz., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 27, 1982, Ser. No. 453,267
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62 **8 Claims**



1. In a Time-Space-Time switching system, a data capture arrangement for use in a time shared conference circuit, said data capture arrangement comprising:

a plurality of switching system subscribers including a first, a second and a third subscriber;

said switching system including:

a Time-Space-Time digital switching network being operable to transfer PCM voice data samples in particular time slots;

a plurality of interface units 9 each said interface unit connected between at least one said subscriber and said switching network, each said interface unit being operated to generate and to transfer said PCM voice data samples of said connected subscribers between said switching network and said subscribers in said particular time slots;

processor means connected to each of said interface units and to said switching network, said processor means being operated to control said transfer of said voice data to said interface units and to said switching network; and

said switching network being operated to connect said first, second and third subscribers in a conference arrangement;

said data capture arrangement further comprising:

timing means connected to said switching network and being operated to generate a plurality of periodic pulses;

first buffering means connected to said timing means and to said switching network, said first buffering means being operated to sequentially store said voice data of said three consecutive switching network time slots, said three voice data being PCM samples of said first, said second and said third subscribers, respectively;

second buffering means connected to said timing means and to said first buffering means, said second buffering means being operated to simultaneously store said three voice data samples of said first buffering means;

said first buffering means being further operated to store a voice data sample of a next time slot, said voice data sample of said next time slot being PCM a sample of a first other subscriber in a second conference arrangement;

first gating means connected to said second buffering means and to said timing means, said first gating means being operated to transmit two voice data samples of said stored three voice data samples, during each said successive time slot;

first comparing means connected to said first gating means and being operated to determine which of said two transmitted voice data samples is greater in magnitude;

second comparing means connected to said first gating means and being operated to determine whether said two transmitted voice data samples are greater in magnitude than a predefined threshold level;

second gating means connected to said second comparing means and being operated to determine whether at least one of said two transmitted voice data samples is greater in magnitude than said threshold level and being further operated to generate a first signal in response to said determination;

third gating means connected to said second gating means and to said first comparing means, said third gating means being operated to generate a second signal of a first value for selecting said voice data sample of greater magnitude, which is greater in magnitude than said threshold level, and said third gating means being operated to generate a second signal of a second value for said two transmitted voice data samples being less in magnitude than said threshold level;

memory means connected to said timing means and to said third gating means, said memory means being operated in response to said second signal of said second value to generate a third signal for indicating which said voice data sample of an identical time slot of the preceding time frame is greater in magnitude;

said third gating means further operated in response to said third signal to generate said second signal of said first value;

said memory means being further operated to store said second signal of a first value for use during an identical time slot of a next successive time frame;

multiplexing means connected to said second buffering means through said first gating means and connected to said third gating means, said multiplexing means being operated in response to said second signal of said first value to transmit said selected voice sample of greater magnitude to said switching network;

decoding means connected to said memory means for indicating a data capture request;

fourth gating means connected to said decoding means and to said timing means, said fourth gating means being operated in response to said data capture request to produce a plurality of activation signals; and

a plurality of data capture means connected to said timing means, to said fourth gating means and to said processor means, said data capture means being operated in response to particular ones of said plurality of activation signals to store a voice data sample, said data capture means being further operated in response to a particular one of said activation signals to store a binary value of said particular time slot.

4,466,095

SPEECH PATH CONTROL SYSTEM

Hisao Kawano, Yokohama; Shun-ichi Naito, and Yuji Shibata, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 24, 1981, Ser. No. 286,465
Claims priority, application Japan, Jul. 28, 1980, 55-103452
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **9 Claims**

8. A signal control system for a time division switching system, where the signal control system is operatively connected to lines which provide speech and non-speech signals, said signal control system comprising:

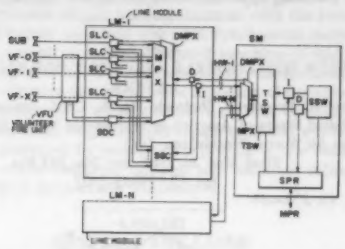
a line module, operatively connected to the lines, multiplexing the speech and non-speech signals; and

a switch module, operatively connected to said line module, including:

a speech path memory, operatively connected to said line module, storing and passing therethrough both the speech and non-speech signals;

means, operatively connected to said speech path memory, for reading out one of the non-speech signals,

generating a new non-speech signal in dependence upon the non-speech signal read out and writing into said speech path memory the new non-speech signal; and



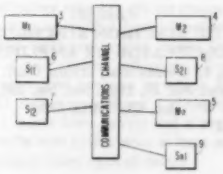
a space switch operatively connected to said speech path memory.

4,466,096

APPARATUS AND METHOD FOR PROVIDING TRANSMITTER HIERARCHY CONTROL FOR EFFICIENT CHANNEL MANAGEMENT

Donald E. Heins, and Robert C. McGaffin, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1982, Ser. No. 357,222
Int. Cl.³ H04J *15/00*; H04L *5/22*
U.S. Cl. 370—85 **5 Claims**



1. In a communications system wherein a plurality of transmit-receive master stations for transmitting messages to a slave station utilize a common channel, an apparatus for establishing a transmit hierarchy at each master station comprising:

means for generating a composite time delay comprising a basic time delay and one or more incremental time delays in response to a command at the time a message is to be transmitted by one of said stations;

means for monitoring said common channel during said composite time delay;

means for generating further time delays in response to an indication that traffic is present on said channel during a previous time delay, each of a succession of said further time delays being shorter in duration than each previous time delay by one of said incremental time delays, and

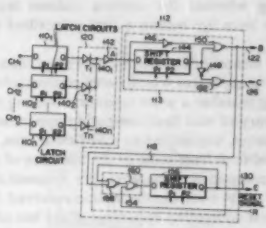
means for enabling transmission of said message when traffic is absent during one of said time delays, whereby stations contending for said channel are arranged in a transmit hierachy prioritized according to the time a command is received by each station.

4,466,097

CONTROL SIGNAL-MULTIPLEXING CIRCUIT

Shigeru Nose, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 4, 1981, Ser. No. 289,907
Claims priority, application Japan, Sep. 3, 1980, 55/121885
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—112 **16 Claims**



1. A control signal-multiplexing circuit which comprises:

a multiplexer having a multiplexing signal for scanning and multiplexing by time division control signals selected from a plurality of channels to produce a first multiplexed control signal; and

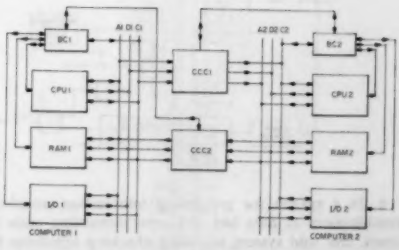
a control signal-converting circuit for receiving said first multiplexed control signal, detecting whether the logic level of the control signals of the respective channels included in said first multiplexed control signal has risen or not, and in the event a rise is detected, generating a second multiplexed control signal formed of a rising pulse, and delivering said second multiplexed control signal to a first control line.

4,466,098

CROSS CHANNEL CIRCUIT FOR AN ELECTRONIC SYSTEM HAVING TWO OR MORE REDUNDANT COMPUTERS

Gary Southard, Coral Springs, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 11, 1982, Ser. No. 387,700
Int. Cl.³ G06F *11/20*; H04M *3/08*
U.S. Cl. 371—9 **9 Claims**



1. In an electronic system including first and second, redundant computing apparatus, said first apparatus being operable in an active mode and said second apparatus being operable in a standby mode and being capable, upon command, of assuming the tasks of said first computing apparatus, each of said first and second computing apparatus comprising, in combination:

(a) a central processing unit;

(b) a random access memory; and

(c) a plurality of bus lines connecting said processing unit with said memory for transmitting address, data and control information between said processing unit and said memory;

the improvement comprising first cross channel circuit means for updating the memory of said second computing apparatus, when said second apparatus is operating in said standby mode, in accordance with changes made in the contents of said random access memory of said first computing apparatus, when said first apparatus is operating in said active mode, said cross channel circuit means including:

(1) first means, connected to those bus lines of said first computing apparatus which carry address information, for signalling whether the current address transmitted on such bus lines lies within a first prescribed range of addresses;

(2) second means, connected to those bus lines of said first computing apparatus which carry control information, for signalling whether a write operation is being performed in the memory of said first computing apparatus; and

(3) third means, connected to said first means, said second means and to at least some of the bus lines of said first and second computing apparatus, for transmitting address, data and write control information received from the bus of said first computing apparatus to the bus of said second computing apparatus in response to signals from said first and second means indicative that a write operation is being performed in the memory of said first computing apparatus at an address that lies within said prescribed range;

whereby the data written into the memory of said first computing apparatus at an address within said prescribed range is also written into the memory of said second computing apparatus at the same address.

4,466,099

INFORMATION SYSTEM USING ERROR SYNDROME FOR SPECIAL CONTROL

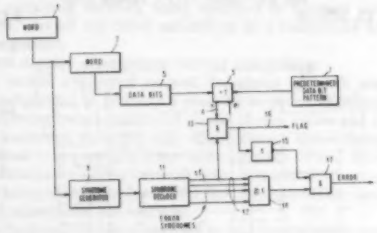
David Meltzer, Wappingers Falls, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

PCT No. PCT/US81/01766, 371 Date Dec. 30, 1981, 102(e) Date Dec. 30, 1981, PCT Pub. No. WO83/02344, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 30, 1981, Ser. No. 349,483

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—47 **10 Claims**



1. In a system for processing information manifested as combinations of data bits and error correcting code (ECC) check bits, said system including checking apparatus for detecting combinations of said data and ECC bits indicative of an error in the combination, said checking apparatus including means for signalling said system when an error is detected in a combination; apparatus for conditioning said system to perform special control functions comprising:

means for detecting a predetermined unique combination of data and ECC bits, said combination being one which is recognized by said checking apparatus as being indicative of an error in the combinations;

means responsive to detection of said predetermined combination for applying a special control indication to said processing apparatus, effectively distinguishing said predetermined combination as having special control significance; and

means responsive to said special control indication for effectively superseding any error indication produced by said checking apparatus in respect to said combination.

4,466,100

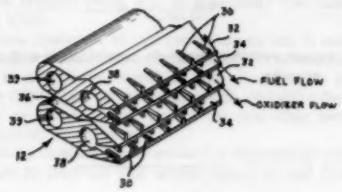
DELTA WING NOZZLE ASSEMBLY FOR CHEMICAL LASERS

James E. Broadwell, Redondo Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1982, Ser. No. 382,324

Int. Cl.³ H01S *3/02*

U.S. Cl. 372—89 **11 Claims**



1. A delta wing nozzle assembly for use in a chemical laser, comprising:

means for injecting a pair of reactive gaseous ingredients at supersonic velocity into a preselected location within said laser;

means interconnected with said injecting means for mixing said reactive gaseous ingredients, said mixing means being in the form of a plurality of delta wing-shaped elements, each of said delta wing-shaped elements being of a triangular configuration and having a leading edge swept back at a preselected angle such that the component of the flow of at least one of said reactive gaseous ingredients normal to said leading edge has a Mach number less than one.

4,466,101

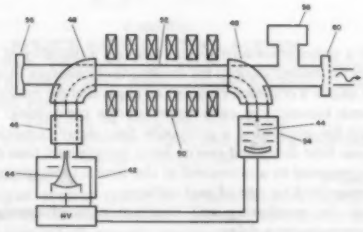
RELATIVISTIC ELECTRON SYNCHROTRON LASER OSCILLATOR OR AMPLIFIER

Neil C. Schoen, 13 Golden Star, Irvine, Calif. 92714

Filed Jul. 29, 1981, Ser. No. 288,011

Int. Cl.³ H01S *3/00*

U.S. Cl. 372—2 **14 Claims**



1. A continuously tunable electron synchrotron laser oscillator or amplifier for the generation or amplification of coherent high power radiation, from the microwave through the x-ray spectral region, comprising means for generating a uniform solenoidal magnetic field and means for generating and adjusting the directional properties of a relativistic electron beam, injecting said electron beam into said uniform solenoidal magnetic field such that the electric field vector of said radiation rotates in near synchronism with perpendicular velocity vec-

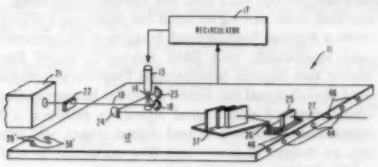
tors of rotating electrons in said beam causing said beam electrons to lose energy by a v·E mechanism, thereby amplifying or increasing the intensity of said radiation at a desired operating frequency, said operating frequency determined by said near synchronism of said rotating electrons with the forward directed Doppler upshifted coherent synchrotron radiation emitted as a result of radiation induced bunching of said relativistic electron beam, and a radiation cavity means including radiation reflection devices to cause a portion of the coherent amplified radiation to make multiple traversals through said uniform solenoidal magnetic field region such that a coherent output is generated by passage of a portion of the coherent amplified cavity radiation through said radiation reflection devices which are partially transmissive.

4,466,102

MODULAR DYE LASER

Ludger H. Wöste, Ecublens, Switzerland, assignor to Lexel Corporation, Palo Alto, Calif.

Filed May 21, 1981, Ser. No. 265,699
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—53 **13 Claims**



1. A dye laser including:

A. a first base plate;

B. means for furnishing a liquid dye capable of lasing at a selected location contiguous to said base plate;

C. means for focusing to said selected location, a beam of pumping radiation creating a population inversion in said dye; and

D. means mounted on said first base plate positioning a pair of optical reflectors respectively on opposite sides of said selected location to reflect optical radiation emitted by said liquid dye, said positioning means for adjusting the orientation of said optical reflectors relative to one another between a first position in which the optical path between said reflectors defines a straight line radiation path leg of a linear laser cavity and a second position in which said reflectors define with at least one other reflector, a closed loop laser optical cavity.

4,466,103

Patent Not Issued For This Number

4,466,104

METALLURGICAL PLANT

Leopold Walzel, Dusseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,106
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102499
Int. Cl.³ F27B *14/00*; F27D *3/00*
U.S. Cl. 373—78 **8 Claims**

1. A metallurgical plant comprising:

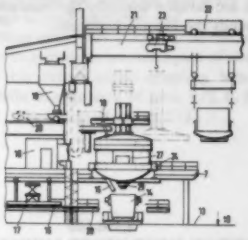
(a) at least two electric arc type furnace vessels located proximate to one another and supported on a charging floor,

(b) all of said furnace vessels being stationary and nonrotating during metallurgical processing and tapping, and having bottom located tapping mechanisms, said tapping mechanisms extending downwardly below said charging floor,

(c) a number of furnace vessel lids comprising electric arc electrodes and associated electrical supply installations, said number of furnace vessel lids being at least one less than the total number of said furnace vessels,

(d) said furnace vessel lids being supported for relative horizontal movement by a movable support structure,

(e) said movable support structure being located at the center of an imaginary circle passing through the center of



said furnace vessels so that said lids are individually capable of being selectively placed in working arrangement with all of said furnace vessels, and

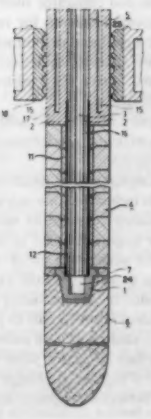
(f) said furnace vessels being further provided with selectively openable lateral deslagging openings and capable of being selectively downwardly tilted, about a horizontal plane, for deslagging through said deslagging openings.

4,466,105

ELECTRODE FOR ARC FURNACES

Hanns Georg Bauer, Witten-Bommern, Fed. Rep. of Germany; Dieter H. Zöllner, Claremorris, Ireland; Josef Otto; Josef Mühlenbeck, both of Wetter, Fed. Rep. of Germany; Friedrich Rittmann, Rückersdorf, Fed. Rep. of Germany; Claudio Conradty, Röthenbach, Fed. Rep. of Germany; Inge Lauterbach-Dammler, Nuremberg, Fed. Rep. of Germany, and Horst Sonke, Leinburg, Fed. Rep. of Germany, assignors to Arc Technologies Systems Ltd.

Filed Jul. 21, 1981, Ser. No. 285,515
Int. Cl.³ H05B *7/08*
U.S. Cl. 373—93 **35 Claims**



1. A metallurgical arc furnace having an electrode, said electrode comprising an upper, electrically conductive metallic portion and a consumable, replaceable lower portion, the portions being substantially cylindrical; a threadable interconnection between the portions, a liquid cooling means within the upper portion including a relatively large diameter outer

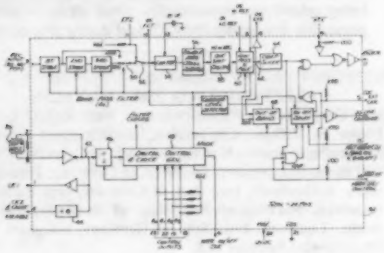
component and a relatively smaller diameter inner component detachably received with the outer component, the inner component extending axially downwardly from the outer component to a point adjacent the threadable interconnection; and at least one insulating moulding having a substantially elevated temperature stability applied slidingly and detachably surroundinng at least a portion of the inner component the insulating moulding having an inner diameter sufficiently in excess of an outer diameter of the inner component at operating temperatures of the arc furnace whereby the insulating moulding slidingly surrounds the inner component.

4,466,106

FREQUENCY SHIFT KEYED MODEM CHIP SET

Arthur L. Serrano, Canoga Park, Calif., assignor to Novation, Inc., Chatsworth, Calif.

Filed Aug. 28, 1981, Ser. No. 297,266
Int. Cl.³ H04L *27/10*
U.S. Cl. 375—9 **14 Claims**



9. A frequency shift keyed modem comprising: a receiver having

(a) a band pass switched capacitor filter means operative on clock signals provided thereto for receiving a frequency shift keyed input signal and providing a band pass filtered output in response thereto, said switched capacitor filter means being an RC active filter utilizing switched capacitors in place of resistors,

(b) a detection means coupled to said switched capacitor filter means for detecting the frequency of said band pass filtered output thereof,

(c) output means coupled to said detection means for providing output signals indicative of a mark and a space responsive to the frequency detected by said detection means,

(d) clock generator means coupled to said switched capacitor filter means for generating clock signals and providing said clock signals to said switched capacitor filter means, said clock generator means including means responsive to a plurality of control input signals to provide a plurality of control signals to said band pass switched capacitor filter means, said switched capacitor filter means being responsive to said control signals to change the filtering characteristics thereof between originate and answer frequency ranges, and

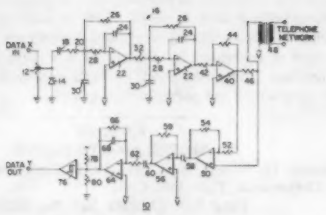
a transmitter having a binary rate multiplier responsive to a clock signal and a plurality of control signals to provide a binary rate multiplier output frequency in response thereto representing a frequency shift keyed transmitter output signal.

4,466,107

DATA COMMUNICATION SYSTEM

Donald L. Stoner, Mercer Island, Wash., assignor to The Microperipheral Corporation, Redmond, Wash.

Filed Sep. 14, 1981, Ser. No. 301,467
Int. Cl.³ H04B *1/38*
U.S. Cl. 375—37 **13 Claims**



1. A system for communicating received digital signals over a bandwidth limited data link, the system comprising:

a low-pass filter having an input for receiving a digital signal with a highest fundamental frequency component within said bandwidth, said filter having a cutoff frequency above said highest fundamental frequency component of said digital signal but below a lowest harmonic frequency component of said digital signal to produce a filtered signal corresponding to said digital singal, said filter having an output to apply said filtered signal to said bandwidth limited data link; and

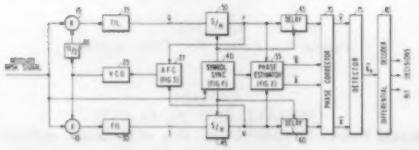
a detector for receiving said filtered signal from said data link, said detector processing said filtered signal to reconstruct said digital signal, whereby said digital signal can be transmitted over said data link without first being modulated and then reconstructed, and the rate of transmission of said digital signal can be increased as long as said highest fundamental frequency component of said digital signal is within said data link bandwidth.

4,466,108

TDMA/PSK CARRIER SYNCHRONIZATION WITHOUT PREAMBLE

Smith A. Rhodes, Falls Church, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 6, 1981, Ser. No. 309,136
Int. Cl.³ H04L *27/22*
U.S. Cl. 375—83 **16 Claims**



1. An apparatus for providing coherent detection of a series of data bursts, each burst of said series having a modulation imparted thereon to provide a plurality of symbols, said series of bursts having a first repetition rate and a signal carrier with a first relative phase and said plurality of symbols having a second repetition rate, said apparatus comprising:

automatic frequency control means;

variable frequency oscillator means responsive to said automatic frequency control means, for providing a local oscillator signal with a second relative phase;

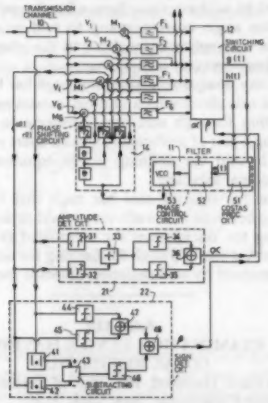
means responsive to said local oscillator signal for demodulating each said data burst so as to provide a pair of baseband signals in phase quadrature;

timing means for providing said second repetition rate;
sampling means responsive to said timing means for sampling said pair of baseband signals at said second repetition rate to provide a pair of baseband samples;
phase estimation means for receiving said pair of baseband samples to provide an approximate indication of the difference between said first and second relative phases in response to said baseband samples, said phase estimation means producing said approximate indication after a predetermined time delay;
delay means for receiving and delaying said pair of baseband samples by approximately said predetermined time delay to provide a pair of delayed samples; and
means for correcting the value of said delayed samples in accordance with said approximate indication, whereby said series of data bursts are coherently detected.

4,466,109
CARRIER RECOVERY ARRANGEMENT FOR SIXTEEN-STATE AMPLITUDE AND PHASE MODULATION AND RECEIVING SYSTEM FOR DIGITAL DATA, COMPRISING SUCH AN ARRANGEMENT

Hikmet Sari, Alfortville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1982, Ser. No. 367,184
Claims priority, application France, Apr. 29, 1981, 81 08549
Int. Cl.[3] H03D 3/22
U.S. Cl. 375—86 **4 Claims**

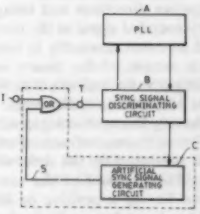


1. A carrier recovery arrangement in a receiving system for digital data which are transmitted by means of sixteen-state amplitude and phase modulation (16 QAM), characterized in that this arrangement comprises successively:
(A) an assembly of six parallel paths each including a series arrangement of a multiplying circuit and a low-pass filter, said assembly receiving the output signal from the transmission channel for producing six respective signals grouped sequentially as three pairs of signals (p(t), q(t)), (r(t), s(t)), (u(t), v(t));
(B) selection circuit means comprising an amplitude-and-sign detection circuit receiving a second pair in said three pairs of signals (r(t), s(t)) at the outputs of the respective low-pass filters for producing a digital signal α, which digital signal is equal to 1 or 0 depending on whether or not the value of $r(t)^2+s(t)^2$ is located between two predetermined threshold values, and for producing a digital signal β, which digital signal is also equal to 1 or 0 in accordance with the value of the expression $\{\text{sgn}(r(t))\oplus\text{sgn}(s(t))\}\oplus\text{sgn}\{|r(t)|-|s(t)|\}$ where sgn denotes the sign and $\oplus$ is the Exclusive-OR-operator, and a cascade arrangement of a switching circuit and a Costas signal processing means, said cascade arrangement receiving said three pairs of signals from said assembly and said digital signals α and β from said detection circuit for selectively producing an error signal representative of the phase error of the received signal in response to one of said three pairs of signals, the selection being effected by said switching circuit depending on the values of said digital signals α and β;
(C) a phase control circuit comprising a voltage-controlled oscillator and a filter for applying said error signal as a control voltage to said oscillator; and
(D) a phase-shifting circuit for coupling the output signal of said oscillator to respective second inputs of said multiplying circuits, this output signal coupling being effected with phase shifts, in sequence, of zero, $\pi/2$, θ, $\theta+\pi/2$, 2θ and $2\theta+\pi/2$, θ being equal to $\tan^{-1}(\frac{1}{3})$.

4,466,110
ARTIFICIAL SYNC SIGNAL ADDING CIRCUIT

Yoshio Kizaki, and Mitsugu Ikawa, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 327,890
Claims priority, application Japan, Dec. 10, 1980, 55-174890
Int. Cl.[3] H04L 7/00
U.S. Cl. 375—108 **3 Claims**

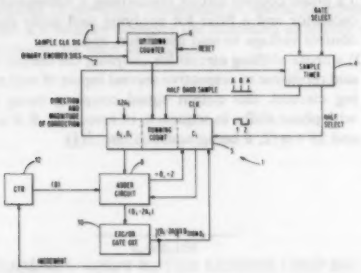


1. A synchronizing signal reconstituting circuit which comprises:
a receiving means for receiving an input signal including an information signal and a synchronizing signal having a constant period;
a synchronizing signal discriminating means for discriminating said synchronizing signal in said input signal from said receiving means;
an artificial synchronizing signal generating means for generating an artificial synchronizing signal when a synchronizing signal is missing from said input signal received in said receiving means; and
an artificial synchronizing signal adding means for adding said artificial synchronizing signal to said input signal, said artificial synchronizing signal generating means including a first flip-flop circuit and a shift register, said first flip-flop circuit being actuated to a set condition by said synchronizing signal or said information signal from said receiving means and being actuated to a reset condition in response to the discrimination of said discriminating means, the shifting function of said shift register being controlled in response to outputs from said first flip-flop circuit, and the output signals from said shift register supplying said artificial synchronization signal.

4,466,111
SYNCHRONIZATION APPARATUS AND METHOD

James F. Bennett, Sudbury, Mass., assignor to GTE Products Corporation, Waltham, Mass.

Filed Nov. 27, 1981, Ser. No. 325,607
Int. Cl.³ H04L 7/04
U.S. Cl. 375—111 20 Claims



1. A synchronization apparatus comprising:

sampling counter means arranged to receive a binary encoded signal of a predetermined rate and an associated sample clock signal of a predetermined rate, said binary encoded signal comprising bits of first and/or second logic values;

timer means arranged to receive the aforesaid sample clock signal and operative to produce a timing signal of a rate twice that of the binary encoded signal, said timing signal comprising a series of successive pairs of pulses A and B;

said sampling counter means being capable of counting in positive and negative directions and being operative to sample the binary encoded signal at the rate of the sample clock signal and to count upwardly in binary fashion in response to each sample of the binary encoded signal having the first logic value and to count downwardly in binary fashion in response to each sample of the binary encoded signal having the second logic value;

first means operative at the occurrence of each A pulse of the timing signal produced by the timer means to retain the then existing binary count of the sampling counter means, said count having a positive or negative signed value expressed by A_i, and to multiply the value of said count by a factor of 2 thereby to provide a resultant quantity expressed by $2A_i$, and further operative at the occurrence of each B pulse of the timing signal produced by the timer means to retain the then existing binary count of the sampling counter means, said count having a positive or negative signed value and expressed by B_i; and

second means associated with the first means and arranged to receive each set of the quantities expressed by $2A_i$ and B_i corresponding to each pair of pulses A and B, said second means being operative to calculate a value and associated positive or negative sign for the expression represented by

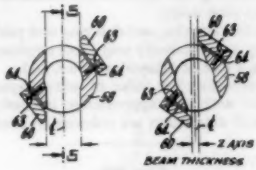
$$\sum_{i=1}^{M} \frac{|(B_i - 2A_i)| \times B_{sign\,Bi}}{KM},$$

where i, M and K are positive integers, i has a value of 1 to M, and sign B_i represents the positive or negative sign of the quantity B_i, said second means being further operative to produce and apply a signal having a value and associated sign as calculated from the foregoing expression to the timer means for altering the timing relationship between the binary encoded signal and the timing signal produced by the timing means by an amount and direction in accordance with said value and associated sign.

4,466,112
VARIABLE DETECTOR APERTURE

John Covic, Wickliffe, and Roland W. Carlson, Lyndhurst, both of Ohio, assignors to Technicare Corporation, Cleveland, Ohio

Filed Jan. 29, 1982, Ser. No. 344,244
Int. Cl.³ G03B 41/16
U.S. Cl. 378—7 7 Claims



1. In a tomographic apparatus for subjecting a planar slice of a body to a fan shaped beam of penetrating radiation and producing an image representative of the variation of attenuation of the beam in the planar slice, the apparatus having means for defining a scan circle, an arc of radiation detector means disposed at least partially around the scan circle and in substantial axial alignment with said beam of radiation, a source of diverging radiation positioned such that radiation from said source is emitted, passes through said scan circle, and is transmitted to the detector means, means for collimating the radiation emitted by said source to form a fan shaped incident beam having a fan angle corresponding to said scan circle and a thickness in a direction orthogonal to the plane of said scan circle the improvement comprising:

(a) an X-ray opaque rotatable elongated bar having a longitudinal axis about which said bar rotates and a radial slot extending through said bar transverse to said axis and defining a pair of uniformally spaced apart parallel interior walls in said bar defining planes equidistant from said longitudinal axis; and

(b) means for rotating said bar such that the orthogonal spacing between said walls varies, said orthogonal spacing defining the thickness of the attenuated fan beam that is transmitted therethrough for limiting the amount of radiation received by said radiation detector means.

4,466,113
X-RAY EXAMINATION DEVICE HAVING A HIGH LOCAL RESOLUTION

Helmut Strecker, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,183
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104052
Int. Cl.³ G03B 41/16
U.S. Cl. 378—146 17 Claims

1. An X-ray examination device comprising an object to be examined,

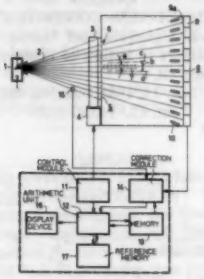
radiation source means for irradiating said object,

detector means having a plurality of radiation detectors for detecting radiation from said source means passing through said object,

diaphragm means having a plurality of apertures corresponding to said plurality of radiation detectors for transmitting a scanning radiation beam from said object to said radiation detectors, said apertures being equally sized to pass said radiation beam with an angle of aperture a smaller than the angle of aperture b defined by said radiation source means and one radiation detector,

displacement means for providing a displacement transverse to said radiation beam between said object and said diaphragm means over a distance covering at least said angle of aperture b,

scatter radiation grid means between said diaphragm means and said detector means for shielding said radiation detectors from scattered radiation, and



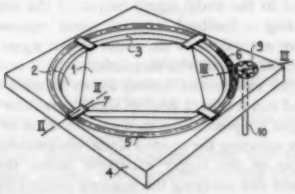
control means connected between said displacement means and said detector means for controlling movement of said displacement means and for providing a display of said object.

4,466,114

DEVICE FOR ROTATING AN ANTI-DIFFUSING SCREEN IN A RONTGEN TOMOGRAPH

Joseph Munch, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 4, 1982, Ser. No. 385,291
Claims priority, application Belgium, Jun. 10, 1981, 889159
Int. Cl.³ H01J *35/16*
U.S. Cl. 378—155 **6 Claims**



1. A device for rotating an anti-diffusion screen in a Röntgen tomograph, comprising essentially a base plate with annular guide groove, an endless annular control element placed freely movable in said guide groove, connecting means placed between the annular control element and the anti-diffusing screen placed at the center and a drive means for driving the annular control element and the anti-diffusing screen coupled thereto.

4,466,115

FM STEREO SIGNAL DEMODULATOR

Masaru Hashimoto, Ayase, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 19, 1979, Ser. No. 95,385
Claims priority, application Japan, Dec. 25, 1978, 53-160435
Int. Cl.³ H04S *1/00*
U.S. Cl. 381—11 **8 Claims**

1. An FM stereo demodulator system for separating a composite stereo signal into left and right signals which comprises:

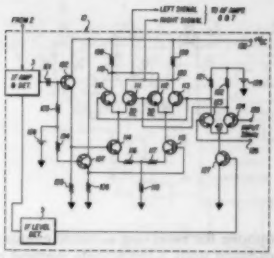
intermediate frequency amplifier means for receiving and amplifying an intermediate frequency FM composite stereo signal;

amplitude detector means for detecting the amplitude of the intermediate frequency output of said intermediate frequency amplifier means;

composite stereo signal detector means for removing said composite stereo signal from the output of said intermediate frequency amplifier means;

means for supplying a 38 kHz switching signal;

means for varying the amplitude of said 38 kHz switching signal in proportion to the amplitude of said intermediate frequency FM signal as controlled by the output of said amplitude detector means; and



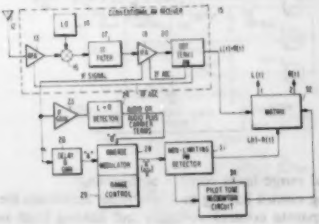
demodulator circuit means coupled to receive the output of said composite stereo signal detector means for separating said composite stereo signal into left and right signals under control of said variable amplitude 38 kHz switching signal received from said amplitude varying means, wherein the stereo separation between said left and right signals is automatically varied in proportion to the amplitude of the FM composite stereo signal.

4,466,116

SIGNAL PROCESSOR FOR AM STEREOPHONIC RECEIVING APPARATUS

Robert D. Streeter, Fort Wayne, Ind., assignor to Magnavox Consumer Electronics Company, Knoxville, Tenn.

Filed Jul. 16, 1982, Ser. No. 399,083
Int. Cl.³ H04H *5/00*
U.S. Cl. 381—15 **11 Claims**



9. In a system for AM stereophonic broadcasting wherein an R.F. signal carrier containing both amplitude and angular modulation components is processed to derive first and second stereophonic related signals, a circuit for conditioning said carrier signal for angle demodulation comprising:

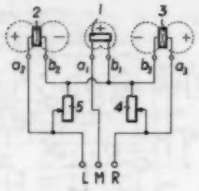
means for deriving a signal from said carrier signal representing the amplitude modulation of said R.F. signal carrier;

means for inversely modulating said R.F. signal carrier in response to said signal from said means for deriving a representative signal when said carrier signal is above a predetermined level, and for passing said signal unmodulated for signal levels below said predetermined level.

4,466,117
MICROPHONE FOR STEREO RECEPTION

Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u.Kino-Geräte Gesellschaft mbH, Austria

Filed Nov. 12, 1982, Ser. No. 441,158
Claims priority, application Austria, Nov. 19, 1981, 4987/81
Int. Cl.³ H04H 5/00
U.S. Cl. 381—26 7 Claims

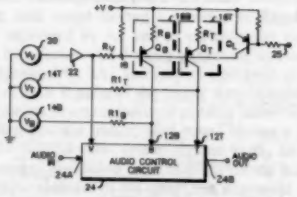


1. A microphone for receiving acoustic events stereophonically in accordance with a center-side method comprising a plurality of electroacoustic transducers including at least one having a unilateral directional characteristic and a main axis, and at least two electroacoustic transducers having a figure-eight characteristic associated with said unilateral directional characteristic transducer and having a principal axes of right angles to said main axis, a common line interconnecting a terminal of each of said unidirectional characteristic transducer and said electroacoustic transducers having a figure-eight characteristic, each of said transducers having an associated outlet, a connecting line connecting each of said outlets, and control means in said connecting line between the outlet of said two electroacoustic transducers having a figure-eight characteristic.

4,466,118
DUAL RANGE AUDIO LEVEL CONTROL

Roger W. Dressler, Pleasant Hill, Calif., assignor to Motorola, Inc.

Filed Feb. 1, 1983, Ser. No. 444,929
Int. Cl.³ H03G 5/14; H04B 1/16
U.S. Cl. 381—102 4 Claims

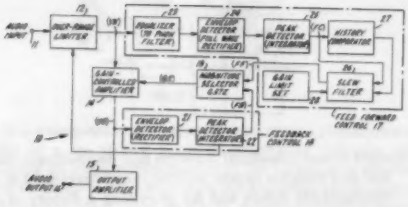


1. A dual range level control comprising:
an analog circuit having multiple input terminals for receiving separate control voltages and having high input impedances;
a first controllable voltage source;
a first resistive element coupled between the first input terminal and the first controllable voltage source;
a first controllable current source coupled to the first input terminal;
a second controllable voltage source;
a second resistive element coupled between the second input terminal and the second controllable voltage source;
a second controllable current source coupled to the second input terminal;
an third controllable voltage source coupled to a third input terminal and to the first and second controllable current sources for controlling said current sources; and
an enabling circuit having an input terminal for receiving an external control signal and an output coupled to provide an enabling signal to said current sources.

4,466,119
AUDIO LOUDNESS CONTROL SYSTEM

Richard W. Peters, Algonquin, and Martin Dippel, Chicago, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Apr. 11, 1983, Ser. No. 469,202
Int. Cl.³ H03G 3/20
U.S. Cl. 381—108 21 Claims

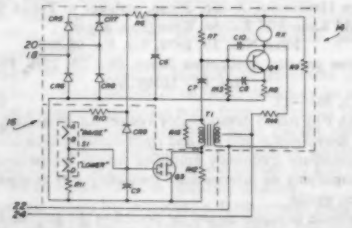


1. An audio loudness control system for use with a broad dynamic range of audio input signals comprising:
a gain-controlled audio amplifier having an audio signal input, a gain control input, and an audio signal output;
feed forward control signal generator means, having an input coupled to the audio signal input of the amplifier, for generating a feed forward control signal representative of excursions of the average audio input signal above a predetermined loudness threshold;
feedback control signal generator means, having an input coupled to the audio signal output of the amplifier, for generating a feedback control signal representative of transient excursions of the audio output signal above the predetermined loudness threshold;
and selector gate means, having inputs coupled to the feed forward and feedback control signal generator means and an output coupled to the gain control input of the amplifier, for selecting the control signal instantaneously representative of the larger excursion above the loudness threshold and applying the selected control signal to the gain control input of the amplifier.

4,466,120
TELEPHONE HANDSET AMPLIFIER CIRCUIT

Wesley F. Walker, Jr., and David Hanon, both of Catoosa County, Ga., assignors to Walker Equipment Corporation, Ringgold, Ga.

Continuation of Ser. No. 273,714, Jun. 15, 1981, abandoned.
This application Sep. 20, 1983, Ser. No. 533,884
Int. Cl.³ H04M 1/60
U.S. Cl. 381—109 14 Claims



1. Telephone signal amplifier, comprising:

an operator accessible switch is operable in at least two states,

means coupled to said operator accessible switch for receiving an audio signal generated by a telephone network and for reducing the level of said telephone network audio signal over a range of levels based on the duration of operation of said switch in either of said states,

an amplifier having in input side coupled to said means for reducing the level of said telephone network audio signal for amplifying the reduced level audio signal, and

a telephdne receiver coupled to the output side of said amplifier for transducing an audio signal to sound.

4,466,121

METHOD AND DEVICE FOR CHARACTER SEGMENTATION

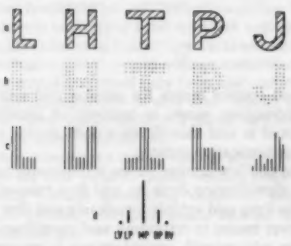
Jozef T. W. Damen, Leidschendam, and Hong S. Tan, Zoetermeer, both of Netherlands, assignors to Netherlands Postal & Telecommunications Services, Leidschendam, Netherlands

Filed Nov. 9, 1981, Ser. No. 319,803

Claims priority, application Netherlands, Nov. 21, 1980, 8006371

Int. Cl.³ G06K *9/34*

U.S. Cl. 382—9 **6 Claims**



1. Method for segmenting substantially fixed-pitch aligned characters, in which each character is converted into an image-element pattern, characterized by

determining an outermost character position on the character line to be segmented;

successively dividing the character line, with several different fixed pitches, into segments, starting from the outermost character position;

classifying each segment, with the aid of fixed criteria, according to its content as space segment, character segment or other segment;

determining the segment width with which, within the character line, the number of space and character segments classified is a maximum and the number of other segments classified is a minimum.

4,466,122

DISCRIMINATOR FOR PATTERN RECOGNITION

Sidney Auerbach, 246 West End Ave., New York, N.Y. 10023

Filed Feb. 17, 1981, Ser. No. 234,814

Int. Cl.³ G06K *9/62*

U.S. Cl. 382—17 **3 Claims**

1. A system for recognizing a condition, comprising:

(a) video signal generating means for generating a video signal;

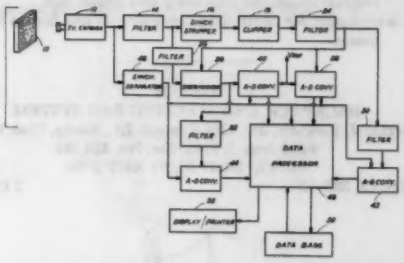
(b) means, responsive to said video signal for deriving a generated amplitude information signal from said video signal;

(c) means, responsive to said video signal for deriving a generated frequency information signal from said video signal;

(d) means for deriving a synchronization information signal indicating the beginning and end of said video signal;

(e) a data base of known frequency and amplitude information signals associated with intellectual identifications comprising conditions identified by an intellectual observer;

(f) computer means responsive to said synchronization information signal and said amplitude and frequency information signals for comparing said generated amplitude and frequency information signals to said known amplitude and frequency information signals in said data base and



determining whether said generated amplitude and frequency information signals match said known amplitude and frequency information signals, respectively; and

(g) output means for displaying the intellectual identification associated with the pair of said known frequency and amplitude information signals in said data base which match said generated amplitude and frequency information signals, respectively.

4,466,123

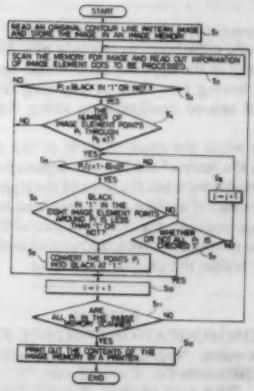
APPARATUS AND METHOD FOR CORRECTING CONTOUR LINE PATTERN IMAGES

Yoshio Arai, and Hiroyuki Katsoka, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,315

Int. Cl.³ G06K *9/02*; H04N *1/40*

U.S. Cl. 382—55 **11 Claims**



1. An apparatus for producing a contour line pattern image from an original image comprising:

first and second frame memories A and B for respectively storing all contour line pattern image information of an original image;

first means for detecting information of image elements around an image element to be processed read from said

memory A and contained in one frame of said frame memories;

second means for determining whether said image element to be processed is a part of a contour line of an image in accordance with information detected by said first means;

third means for writing contour lines formed of an assembly of said image elements determined as contour lines at least at every other image element in said memory B;

fourth means for outputting information stored in said memory B after completing processing of information of one original image and displaying said image; and

a controller for controlling processing of said first to fourth means.

4,466,124

BACKPACK AND SLEEPING BAG SYSTEM

Arthur J. Kirkham, Jr., 9381 Peacock Dr., Sandy, Utah 84070

Filed Aug. 2, 1982, Ser. No. 404,041

Int. Cl.³ B65D *30/10*; A45F *3/04*

U.S. Cl. 383—2 **2 Claims**

1. An expandable storage bag comprising

an elongate, cylindrical body made of a flexible material;

drawstrings at the opposite ends of said body; and

a zipper having two rows of engaging teeth extending in parallel spaced configuration along the length of said body,

whereby when the rows of teeth of the zipper are disengaged, the body of the bag can expand to its full size with the material between the rows of the zipper forming a part of the exterior surface of the bag, and when the rows of teeth are engaged, the circumference of the bag is reduced and the material between the rows of teeth of the zipper is folded within the interior of the bag.

4,466,125

COMMUNICATION CONTROL SYSTEM

Kenzi Kanayama, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 22, 1982, Ser. No. 370,963

Claims priority, application Japan, Apr. 24, 1981, 56-62925; May 2, 1981, 56-67527; Jul. 24, 1981, 56-116554

Int. Cl.³ H04B *3/60*; H04Q *7/02*

U.S. Cl. 455—56 **7 Claims**

1. A communication control system for making a mutual communication between at least one vehicle and a communication station,

said communication station comprising

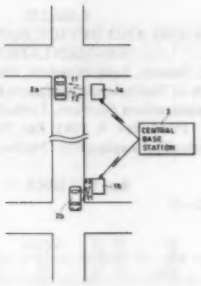
first transmitter/receiver means for communicating with said vehicle, and

first control means for causing said first transmitter/-receiver means to transmit an identification code for identifying said vehicle;

said vehicle comprising

second transmitter/receiver means for communicating with said communication station,

identification code storing means for storing the identification code from said communication station as received by said second transmitter/receiver means, and



second control means for causing said second transmitter/receiver means to transmit an identification code stored in said identification code storing means to said communication station;

wherein said first control means is responsive to reception of said identification code by said first transmitter/receiver means from said vehicle for causing said first transmitter/-receiver means to retransmit said identification code; and

wherein said second control means is responsive to said retransmitted identification code being received by said second transmitter/receiver means for determining whether said received retransmitted identification code corresponds to said stored identification code.

4,466,126

TUNER APPARATUS

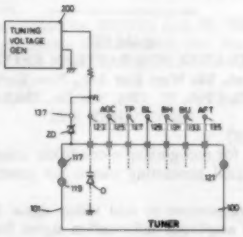
Isao Fujimoto, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,234

Claims priority, application Japan, Jun. 4, 1979, 54-70430; Jun. 29, 1979, 54-83331; Jul. 14, 1979, 54-96893[U]

Int. Cl.³ H03J *7/08*; H04B *1/16*

U.S. Cl. 455—169 **41 Claims**



1. A tuner apparatus, comprising:

a voltage controlled variable reactance means the reactance of which varies as a function of a control voltage being applied thereto,

a tuner means comprising a tuning circuit including said

voltage controlled variable reactance means, said tuning circuit having a tuning frequency variation characteristic dependent upon the variation of the reactance of said voltage controlled variable reactance means,

variable tuning voltage generating means coupled to said voltage controlled variable reactance means for generating a variable tuning voltage and applying said tuning voltage to said voltage controlled variable reactance means as said control voltage therefor, wherein the variation range of said variable tuning voltage is selected such that the variation of the tuning frequency over a desired receiving frequency band is defined by a predetermined upper limit frequency and a predetermined lower limit frequency and wherein a plurality of receiving channels are distributed between said upper limit frequency and said lower limit frequency, and

upper limit constant voltage limiting means for limiting to a predetermined upper limit voltage said variable tuning voltage applied to said voltage controlled variable reactance means by said variable tuning voltage generating means when said variable tuning voltage exceeds said predetermined upper limit voltage, said predetermined upper limit voltage being selected such that said tuning circuit is tuned to a tuning frequency falling within a predetermined upper frequency range associated with said upper limit frequency of said desired receiving frequency band, wherein said upper limit constant voltage limiting means is provided in said tuner apparatus and said variable tuning voltage applied to said voltage controlled variable reactance means is derived only from said variable tuning voltage generating means in said tuner means, and

wherein said tuner means includes a shield member housing at least said tuning circuit, and

which further comprises a tuning voltage supply path means for supplying said variable tuning voltage from said variable tuning voltage generating means to said voltage controlled variable reactance means located within said shield member, and

wherein said tuning voltage supply path means has a connection terminal, and said upper limit constant voltage limiting means receives the tuning voltage from the connection terminal,

whereby said tuning circuit is prevented from deviating from the tuning frequency thereof towards a frequency outside said predetermined upper frequency range associated with said upper limit frequency of said desired receiving frequency band.

4,466,127

ENTRY APPARATUS OF DIGITAL VALUE IN MEMORY

Tsutomu Ohgishi, Hirakata, and Tadashi Sakurai, Neyagawa, both of Japan, assignors to Sanyo Electric Co., Ltd.

Division of Ser. No. 825,183, Aug. 17, 1977, abandoned. This application May 16, 1979, Ser. No. 39,454

Claims priority, application Japan, Dec. 18, 1976, 51-152176

Int. Cl.³ H03J *5/00*

U.S. Cl. 455—182 **5 Claims**

1. Digital value entry apparatus for a radio receiver comprising

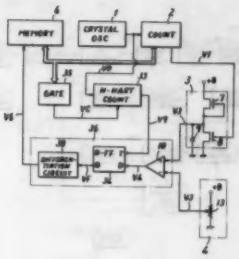
tuner means including phase lock loop circuit means having oscillating means and control means including a programmable divider means for controlling the frequency of said oscillating means for selecting a first signal within a given frequency band,

means including means for generating clock pulses and means for counting said clock pulses for generating a repetitively changeable digital value as a function of time over a predetermined range of values corresponding to at least a portion of said frequency band including the frequency of said first signal,

memory means coupled to said changeable digital value generating means and responsive to a load enable signal for loading in said memory means a digital value which corresponds to said first signal, the output of said memory means being coupled to said programmable divider means to establish its division ratio and thereby control the frequency of said oscillating means,

means operatively coupled to said changeable digital value generating means for providing to said memory means a load enable signal in synchronism with and at a predetermined phase time of the repetitive change of said changeable digital value corresponding to said first signal,

an N-nary counter responsive to said clock pulses for repetitively counting a number N of said clock pulses and producing an output representative of said count,



means responsive to the output of said N-nary counter and coupled to said load enable signal providing means for controlling generation of said load enable signal in synchronism with the output fron said N-nary counter, whereby the digital value is loaded to said memory means at an interval of the pulse count number N, and

means operatively coupled to said load enable signal providing means for adjusting the phase time of said load enable signal, whereby a digital value obtainable from said changeable digital value generating means at the phase time, as adjusted by said adjusting means, is loaded in said memory means responsive to the load enable signal.

4,466,128

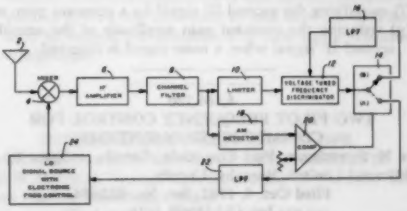
AUTOMATICALLY CENTERED PULSED FM RECEIVER

James B. Couvillon, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 15, 1981, Ser. No. 225,174

Int. Cl.³ H03J *7/10*

U.S. Cl. 455—208 **12 Claims**



3. A radio frequency receiver including a bandpass filter for receiving pulsed FM signals comprising:

a frequency discriminator having a first input for receiving intermediate frequency signals and/or bandpass filtered noise, and an output centered on the noise output of the receiver bandpass filter;

a discriminator feedback circuit means connected to a second input for coupling said frequency discriminator output to tune said bandpass filter in the absence of received RF signals; and

a feedback means for maintaining the received RF signals at

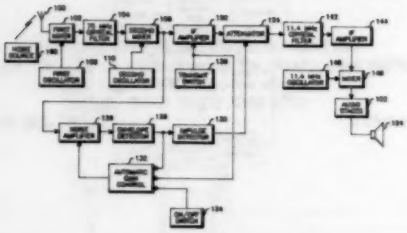
the center frequency of said discriminator during receipt of RF signals.

4,466,129

NOISE REDUCING CIRCUITRY FOR SINGLE SIDEBAND RECEIVERS

Frank R. Skutta, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1982, Ser. No. 375,513
Int. Cl.³ H04B 1/10
U.S. Cl. 455—219 **8 Claims**



8. A method for reducing noise in a radio frequency (RF) signal receiver receiving an RF signal having a frequency in a predetermined frequency band, said RF signal receiver including antenna means having a noise bandwidth that increases as the frequency of the RF signal increases, and cascaded first and second tunable circuits coupled to said antenna means providing first and second intermediate frequency signals, respectively, in response to tuning said receiver to a selected RF signal frequency in the predetermined frequency band, and said antenna means receiving noise signals from a noise signal source, said method comprising the steps of:

(a) filtering the first IF signal and passing to the second tunable circuit signals in a passband that is substantially the same as the noise bandwidth of the antenna means when said receiver is tuned to the lowest RF signal frequency in the predetermined frequency band;

(b) amplifying the second IF signal by a gain varied in response to a gain control signal;

(c) producing an output signal having a magnitude proportional to the envelope of the amplified second IF signal;

(d) generating the gain control signal from the output signal;

(e) detecting the presence of noise signals in the output signal;

(f) amplifying the second IF signal by a constant gain; and

(g) reducing the constant gain amplitude of the amplified second IF signal when a noise signal is detected.

4,466,130

TWO PILOT FREQUENCY CONTROL FOR COMMUNICATION SYSTEMS

Ake N. Sewerinson, Port Coquitlain, Canada, assignor to Ael Microtel Limited, Burnaby, Canada

Filed Oct. 4, 1982, Ser. No. 432,484
Int. Cl.³ H04B 1/16
U.S. Cl. 455—260 **7 Claims**

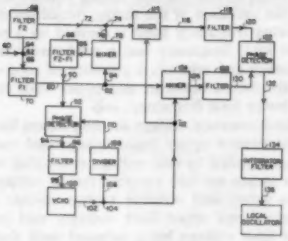
1. Apparatus for adjusting the local oscillator frequency of a remote radio receiving station to compensate for frequency errors introduced in the transmission of information including highly stable pilot frequency signals of a first frequency and a second frequency transmitted from a reference station to said remote station, said first and second frequencies being modified by said frequency errors, resulting in third and fourth frequencies that are present at said remote location, comprising at said remote station:

first means for separating said third and fourth frequencies and applying these frequencies along separate paths;

second means for combining said third and fourth frequencies to obtain the difference there-between;

a voltage controlled crystal oscillator (VCXO) having a control loop by which a control signal is applied to adjust said oscillator frequency;

third means for deriving a first control signal from said difference frequency and applying said control signal to the control loop of said VCXO;



fourth means responsive to the separated third and fourth frequencies and to the output frequency of said VXCO to obtain an error signal which is equal in frequency to twice the frequency error introduced in transmission; and

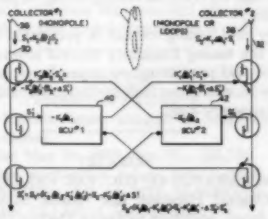
means for converting said error signal into a second control signal for adjusting said local oscillator frequency.

4,466,131

AUTOMATIC SEPARATION SYSTEM

Rabindra N. Ghose, Los Angeles, and Walter A. Sauter, Malibu, both of Calif., assignors to 501 American Nucleonics Corporation, West Lake Village, Calif.

Filed Sep. 29, 1982, Ser. No. 427,633
Int. Cl.³ H04B 1/10
U.S. Cl. 455—278 **17 Claims**



1. A signal separator for separating radio frequency signals, comprising:

a pair of signal collectors, each signal collector positioned to receive a plurality of radio frequency signals of the same general frequency band at a location spaced from the other of said signal collectors;

a pair of transmission means, each of said pair of transmission means coupled to a respective signal collector to conduct the signals received from one signal collector to a respective signal utilization device; and

a pair of signal cancellation means, each of said pair of signal cancellation means having reference, error input and output lines and means therein for developing the negative complement of a signal of said reference line for introduction to said output line;

a respective reference line coupled to each respective transmission means, said error input and output lines of each of said signal cancellation means being coupled to the remaining of said pair of transmission means,

said output lines coupled to the respective transmission

means at a point electrically closer to the respective signal collector than said reference lines and said error input lines coupled to the respective transmission means at a point electrically further from the respective signal collector than said reference lines;

each signal cancellation means substantially nulling in the transmission means coupled to its output line a predominant signal appearing in its reference line;

each signal cancellation means further defining a predominant signal in the transmission means coupled to its output line and the two signal cancellation means substantially null out one signal from each transmission means.

4,466,132
CROSS-POLARIZATION CROSSTALK ELIMINATION CIRCUIT

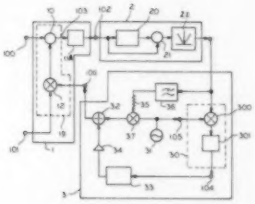
Junji Namiki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd.

Filed Apr. 5, 1982, Ser. No. 365,143

Claims priority, application Japan, Apr. 15, 1981, 56-55529; Apr. 15, 1981, 56-55530

Int. Cl.³ H04B *1/12*

U.S. Cl. 455—295 **1 Claim**



1. A cross-polarization crosstalk elimination circuit for a receiver of two mutually orthogonal cross-polarized waves, said circuit being adapted to restore a baseband signal which is free of cross-polarization interference attributable to orthogonal cross-polarization crosstalk components, said circuit comprising:

orthogonal cross-polarization crosstalk component adder means having a weighting circuit means for multiplying an interference component of the received orthogonal cross-polarized signals by a compensation coefficient,

compensating adder means for adding an output of said weighting circuit means to a desired one of the received cross-polarized signals;

detector means for detecting any apparent difference between an estimate of an originally transmitted signal and a desired one of the received signals on a basis of an output of said cross-polarization component adder means;

oscillator means for generating a small cyclic output signal;

correlator means for detecting any correlation between the output of said oscillator means and an output of said detector means;

integrator means for integrating an output of said correlator means;

low-pass filter means responsive to said detector means for smoothing the output of said detector means;

attenuator means for attenuating the output of said oscillator means in response to the output of said low-pass filter means; and

control unit adder means for adding an output of said integrator means to an output of said attenuator means and for supplying the resulting sum as the compensation coefficient for said weighting circuit means.

4,466,133
RADIO RECEIVER APPARATUS INCLUDING MULTIPATH FADE COMPENSATING ARRANGEMENT

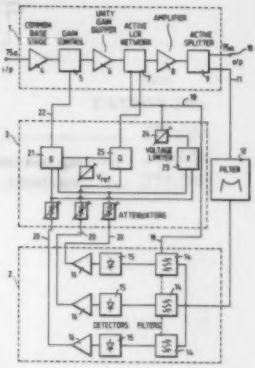
Alistair J. Price, London, England, assignor to The General Electric Company, p.l.c., London, England

Filed May 19, 1982, Ser. No. 379,938

Claims priority, application United Kingdom, May 22, 1981, 8115865; Feb. 22, 1982, 8205148

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—303 **4 Claims**



1. Receiver apparatus for radio transmission system in which propagation effects such as multipath fading may give rise to attenuation of signal frequency components within the received signal frequency band, said receiver apparatus including an intermediate frequency stage defining part of a received signal path through said apparatus, the apparatus comprising:

(a) a fading compensation network connected to said intermediate frequency stage in said received signal path,

(b) detector means,

(c) means connecting said detector means to said fading compensation network to derive signals representing the respective amplitudes of signal frequency components in respective narrow bands spaced within the band of frequencies passed by said network,

(d) circuit means responsive to departures of said derived signals from predetermined relative values, and

(e) means responsive to outputs from said circuit means to control the center frequencies of said narrow bands and to control at least one parameter of said network such as to tend to reduce the attenuation of said signal frequency components.

4,466,134
INTERMEDIATE FREQUENCY SLOPE COMPENSATION CONTROL ARRANGEMENTS

John D. McNicol, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 29, 1982, Ser. No. 373,036

Int. Cl.³ H04B *1/10*; H03H *7/03*

U.S. Cl. 455—311 **23 Claims**

10. Apparatus comprising:

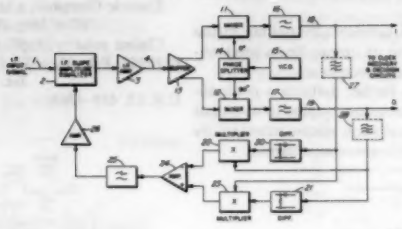
means for deriving an intermediate frequency (I.F.) signal from a modulated carrier wave;

means responsive to a control signal for compensating for slope of the I.F. signal;

means for demodulating the compensated I.F. signal to produce differently-phased demodulated signals;

means for recovering data from the differently-phased demodulated signals; and

control means responsive to said differently-phased demodulated signals prior to the data recovery means, for producing said control signal and applying it to said compensating means.



DESIGN PATENTS

GRANTED AUG. 14, 1984

ERRATA

For CLASS	See PATENT NO.
D99–028	275,055
D99–028	275,056
D08–395	275,059

275,049
CHAIR

Hans V. Klier, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 1, 1980, Ser. No. 192,680

Claims priority, application Italy, Apr. 2, 1980, 53088/80[U]

Term of patent 14 years

U.S. Cl. D6—360

275,050
CHAIR

Robert Aronowitz, 40 E. 84th St., New York, N.Y. 10028, and Bernard Katzanek, 100 Caton Ave., Brooklyn, N.Y. 11218

Filed Jan. 25, 1982, Ser. No. 342,577

The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—366

275,051
CHAIR

William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.

Division of Ser. No. 134,763, Mar. 23, 1980, which is a continuation-in-part of Ser. No. 108,961, Jan. 18, 1980, Ser. No. 62,006, Jul. 30, 1979, and Ser. No. 38,124, May 11, 1979. This application Aug. 13, 1982, Ser. No. 407,793

The portion of the term of this patent subsequent to Nov. 2, 1996, has been disclaimed.

Term of patent 14 years

U.S. Cl. D6—366

275,052
CHAIR

William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.

Division of Ser. No. 134,763, Mar. 23, 1980, which is a continuation-in-part of Ser. No. 108,961, Jan. 18, 1980, Ser. No. 62,006, Jul. 30, 1979, and Ser. No. 38,124, May 11, 1979. This application Aug. 13, 1982, Ser. No. 407,795

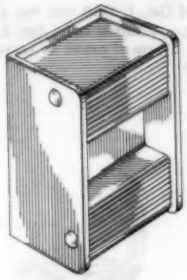
Term of patent 14 years

U.S. Cl. D6—366

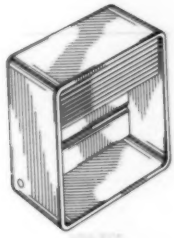
275,053
CHAIR
William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 134,763, Mar. 23, 1980, which is a continuation-in-part of Ser. No. 108,961, Jan. 18, 1980, Ser. No. 62,006, Jul. 30, 1979, and Ser. No. 38,124, May 11, 1979. This application Aug. 13, 1982, Ser. No. 407,796
Term of patent 14 years
U.S. Cl. D6—366

275,054
STOOL
Robert Aronowitz, 40 E. 84th St., New York, N.Y. 10028, and Bernard Katzanek, 100 Caton Ave., Brooklyn, N.Y. 11218
Filed Jan. 25, 1982, Ser. No. 342,578
The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—360

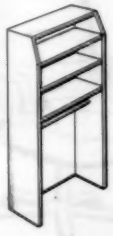
275,055
LOCK BOX
Richard W. Davis, 2107 E. Aspen, Tempe, Ariz. 85282
Filed Oct. 1, 1981, Ser. No. 307,532
Term of patent 14 years
U.S. Cl. D99—28



275,056
LOCK BOX
Richard W. Davis, 2107 E. Aspen, Tempe, Ariz. 85282
Filed Oct. 1, 1981, Ser. No. 307,533
Term of patent 14 years
U.S. Cl. D99—28



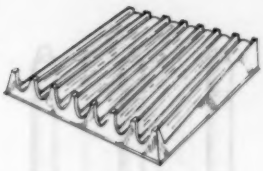
275,057
STORAGE UNIT
Michael Freedenberg, Buffalo Grove, Ill., assignor to M&S Installation, Inc., Park Ridge, Ill.
Filed Apr. 30, 1981, Ser. No. 259,021
Term of patent 14 years
U.S. Cl. D6—478



275,058
PRODUCT DISPLAY RACK

Paul Flum, St. Louis, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Feb. 26, 1982, Ser. No. 352,940
Term of patent 14 years
U.S. Cl. D6—467



275,059
CONNECTOR CLIP FOR THE SUPPORT BARS OF ASSEMBLABLE WINE RACKS

Terence S. Hoeffler, Great Ryburgh, England, assignor to J & R Hathway Limited, Norfolk, England

Filed Aug. 25, 1981, Ser. No. 295,995
Claims priority, application United Kingdom, Mar. 30, 1981, 999701
Term of patent 14 years
U.S. Cl. D8—395

275,060
ARMLESS CHAIR BODY

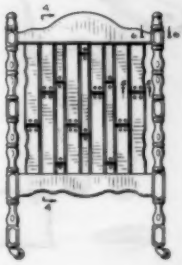
Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Nov. 19, 1981, Ser. No. 322,866
Term of patent 14 years
U.S. Cl. D6—380

275,061
CRIB FOOTBOARD

Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,505
Term of patent 14 years
U.S. Cl. D6—505

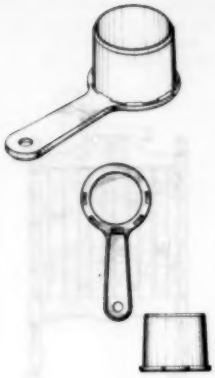


275,062
CONVEX HEMISPHERICAL MIRROR PANEL FOR A SUSPENDED CEILING GRID

Paul A. Sorko-Ram; Peter E. Mack, and Wayne L. Harker, all of Sturgis, Mich., assignors to Ram Products Company, Sturgis, Mich.

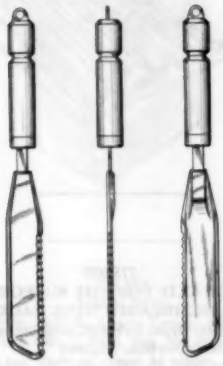
Filed Jun. 2, 1980, Ser. No. 155,276
Term of patent 14 years
U.S. Cl. D6—300

275,063
MEASURING RECEPTACLE WITH CUP WALL REMOVABLE FROM HANDLE ATTACHED BOTTOM
Harry R. Greene, Normandy Park, Wash., assignor to Shirley J. P. Kelson, Seattle, Wash.
Filed Mar. 10, 1982, Ser. No. 356,844
Term of patent 14 years
U.S. Cl. D7—50



275,064
PLASTIC PUNCH BOWL LADLE OR SIMILAR ARTICLE
Burt K. Todd, Ligonier, Pa., assignor to Kerr-Hays Company, Ligonier, Pa.
Filed Dec. 14, 1981, Ser. No. 330,176
Term of patent 14 years
U.S. Cl. D7—104

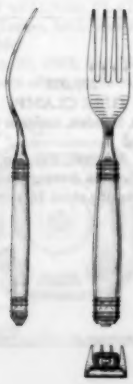
275,065
SPATULA KNIFE
Fred S. Steiner, Woodmere, N.Y., assignor to Bonny Products, Inc., Lynbrook, N.Y.
Filed May 26, 1982, Ser. No. 382,147
Term of patent 14 years
U.S. Cl. D7—102



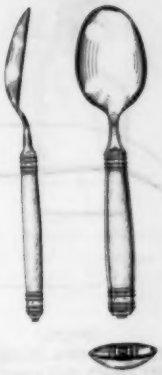
275,066
SPOON
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Gardena, Calif.
Filed Jul. 22, 1982, Ser. No. 400,857
Term of patent 14 years
U.S. Cl. D7—137

275,067
KNIFE
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Gardena, Calif.
Filed Jul. 22, 1982, Ser. No. 400,858
Term of patent 14 years
U.S. Cl. D7—151

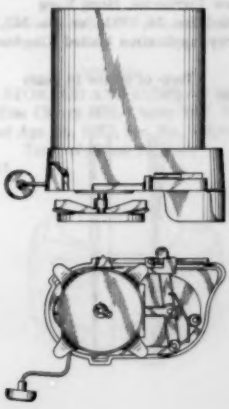
275,068
FORK
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Gardena, Calif.
Filed Jul. 22, 1982, Ser. No. 400,859
Term of patent 14 years
U.S. Cl. D7—151



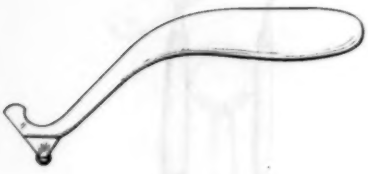
275,069
SPOON
Larry R. Laslo, New York, N.Y., assignor to American Commercial Incorporated, Gardena, Calif.
Filed Jul. 22, 1982, Ser. No. 400,860
Term of patent 14 years
U.S. Cl. D7—151



275,070
HAND SEEDER
Thomas E. Brown, Mechanicsburg, Pa., assignor to Wilkinson Sword, Inc., Atlanta, Ga.
Filed Nov. 10, 1982, Ser. No. 440,644
Term of patent 14 years
U.S. Cl. D8—2



275,071
GLASS CUTTER
Mellen-Thomas Benedict, 4760 Yadkin Rd., Fayetteville, N.C. 28303
Filed Dec. 24, 1981, Ser. No. 334,439
Term of patent 14 years
U.S. Cl. D8—51



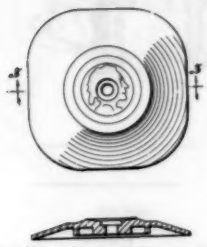
275,072
POCKET KNIFE
Roland Palmquist, Norrtalje, Sweden, assignor to Prima Products Ltd., New Territories, Hong Kong
Filed Jan. 26, 1982, Ser. No. 342,793
Claims priority, application United Kingdom, Jul. 27, 1981, 1001678
Term of patent 14 years
U.S. Cl. D8—99

275,073
AUTOMOBILE WHEEL ROTATIONAL BLOCKING BOOT
Charles A. Winter, 3188 W. Alameda, Denver, Colo. 80219
Filed Sep. 28, 1981, Ser. No. 306,192
Term of patent 14 years
U.S. Cl. D8—330

275,074
MOUNTING CLIP
Jesus R. Villanueva, Justice, Ill., assignor to The Cooperative Marketing Co., Elk Grove Village, Ill.
Filed Jul. 20, 1982, Ser. No. 400,099
Term of patent 14 years
U.S. Cl. D8—373

275,075
TUBE CLAMP
Bengt Magnér, Mellösa, Sweden, assignor to Opto Systems Ltd., Staylybridge, England
Filed Jan. 30, 1981, Ser. No. 230,350
Claims priority, application Sweden, Aug. 1, 1980, 80-1475
Term of patent 14 years
U.S. Cl. D8—382

275,076
ROOF INSULATION STRESS-DISTRIBUTION FASTENER PLATE
Lawrence H. Bowen, Tempe, Ariz., assignor to Carlisle Corporation, Cincinnati, Ohio
Filed Jun. 21, 1982, Ser. No. 390,226
Term of patent 14 years
U.S. Cl. D8—399

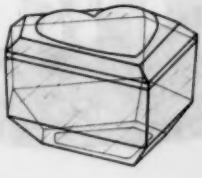


275,077
ROOF INSULATION STRESS-DISTRIBUTING FASTENER PLATE
Lawrence H. Bowen, Tempe, Ariz., assignor to Carlisle Corporation, Cincinnati, Ohio
Filed Jun. 21, 1982, Ser. No. 390,227
Term of patent 14 years
U.S. Cl. D8—399

275,078
BOTTLE
Dale R. Wassergord, Kansas City, Mo.; Dale E. Fahnstrom, and Archie G. Drummond, Jr., both of Chicago, Ill., assignors to Realex Corporation, Kansas City, Mo.
Filed Jan. 18, 1982, Ser. No. 340,268
Term of patent 14 years
U.S. Cl. D9—300

275,079
COMBINED STORAGE AND DISPLAY CONTAINER
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed Apr. 12, 1982, Ser. No. 367,484
Term of patent 14 years
U.S. Cl. D9—310

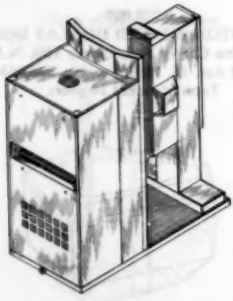
275,080
COMBINED STORAGE AND DISPLAY CONTAINER
George C. Sun, One Cherry Hill, Cherry Hill, N.J. 08002
Filed Apr. 16, 1982, Ser. No. 368,963
Term of patent 14 years
U.S. Cl. D9—315



275,081
DIGITAL CLOCK
Bernard Mermelstein, c/o M.Z. Berger & Co., 20 W. 37th St., New York, N.Y. 10018
Filed Mar. 15, 1982, Ser. No. 358,429
Term of patent 14 years
U.S. Cl. D10—9

275,082
ELECTRONIC TIMING DEVICE
John W. Goodin, Long Beach; Edward E. Albright, Santa Ana, and Amy K. Tamura, Long Beach, all of Calif., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 16, 1981, Ser. No. 331,436
Term of patent 14 years
U.S. Cl. D10—40

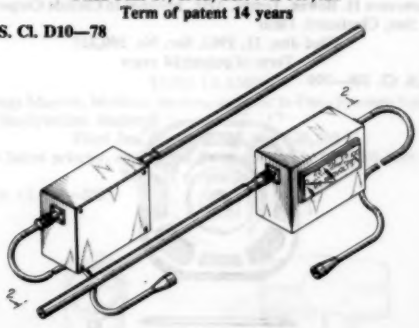
275,083
IN-VIVO RADIATION COUNTER OR SIMILAR ARTICLE
David E. Pollard, Livermore, Calif., assignor to Helgeson Scientific Services, Pleasanton, Calif.
Filed Oct. 13, 1981, Ser. No. 310,967
Term of patent 14 years
U.S. Cl. D10—47



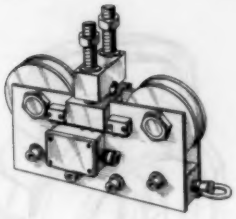
275,084
AQUARIUM THERMOMETER
Marvin A. Goldman, Great Neck; Jerome N. Goldman, New York, both of N.Y.; Silvio J. Di Marchi, Wyckoff, N.J., and Arthur Gilmore, Greenlawn, N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.
Division of Ser. No. 913,385, Jun. 8, 1978. This application May 19, 1980, Ser. No. 151,476
Term of patent 14 years
U.S. Cl. D10—58

275,085
WEATHER VANE
Richard A. Mauro, 10 Freeman Rd., Somerset, N.J. 08873
Filed Apr. 19, 1982, Ser. No. 369,593
Term of patent 14 years
U.S. Cl. D10—59

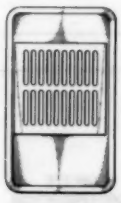
275,086
VOLT METER
Charles M. McDonough, Stamford, Conn., assignor to PCF Group Inc., Stamford, Conn.
Filed Jun. 17, 1982, Ser. No. 389,424
Term of patent 14 years
U.S. Cl. D10—78



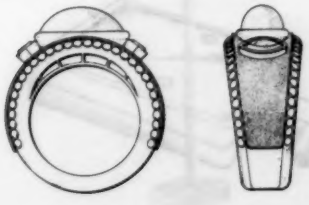
275,087
CLAMP LINE TENSIOMETER
Max Van Mastrigt, Sunnyvale, Calif., assignor to W. C. Dillon & Company, Inc., Van Nuys, Calif.
Filed Aug. 19, 1982, Ser. No. 409,643
Term of patent 14 years
U.S. Cl. D10—83



275,088
DOOR CHIME
Kohen Kachi, and Hiroyuki Nishimura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Mar. 12, 1982, Ser. No. 357,643
Claims priority, application Japan, Sep. 17, 1981, 56-41376
Term of patent 14 years
U.S. Cl. D10—118

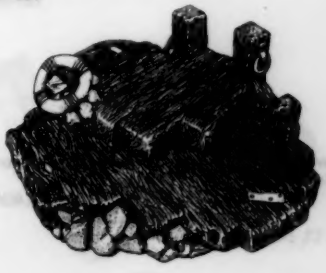


275,089
RING
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Nov. 6, 1981, Ser. No. 319,038
Claims priority, application Italy, May 8, 1981, 35799/81[U]
Term of patent 14 years
U.S. Cl. D11—34



275,090
FAIRY TALE FIGURE
Volker Schulze-Wechsungen, Stolberger Strasse 18, D-4000 Düsseldorf 11, Fed. Rep. of Germany
Filed May 18, 1982, Ser. No. 379,325
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 89 AR 298
Term of patent 14 years
U.S. Cl. D11—136

275,091
TABLE ORNAMENT
Doreen N. Roberts, Gwynedd, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Aug. 24, 1981, Ser. No. 295,283
Claims priority, application United Kingdom, Apr. 8, 1981, 999 864
Term of patent 14 years
U.S. Cl. D11—157



275,092

FAIRING FOR A MOTORCYCLE

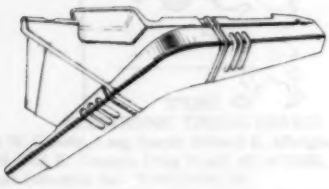
Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,538

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, MR 13067

Term of patent 14 years

U.S. Cl. D12—126



275,093

MOTORCYCLE FAIRING

Vernon J. Hunt, Milwaukee, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jun. 25, 1982, Ser. No. 392,025

Term of patent 14 years

U.S. Cl. D12—182

275,094

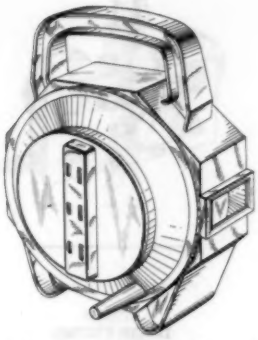
PORTABLE RETRACTABLE CORD STORAGE SYSTEM

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Sep. 30, 1982, Ser. No. 431,963

Term of patent 14 years

U.S. Cl. D13—30



275,095

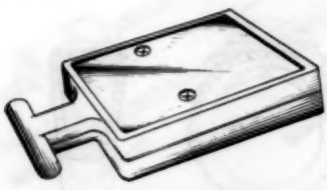
CARTRIDGE FOR A HOME COMPUTER VIDEO GAME

Yang Fang, 145, Keelung Rd., Sec. 1, Taipei, Taiwan

Filed Aug. 17, 1982, Ser. No. 408,740

Term of patent 14 years

U.S. Cl. D14—1



275,096

COMBINED MICROPHONE AND LOUDSPEAKER

Edward W. Festa, Holmdel, N.J.; John N. McGarvey, Drexel Hill, Pa.; Gordon E. Sylvester, Jamaica, N.Y., and James Wilson, Fair Haven, N.J., assignors to AT & T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 17, 1982, Ser. No. 358,913

Term of patent 14 years

U.S. Cl. D14—12

275,097

MICROPHONE

Edward W. Festa, Holmdel, N.J.; John N. McGarvey, Drexel Hill, Pa.; Gordon E. Sylvester, Jamaica, N.Y., and James Wilson, Fair Haven, N.J., assignors to AT & T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 17, 1982, Ser. No. 358,914

Term of patent 14 years

U.S. Cl. D14—12

275,098

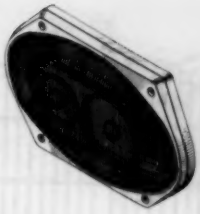
SPEAKER

Kenneth E. Flick, 11041 SW. 43rd St., Miami, Fla. 33165

Filed Feb. 1, 1982, Ser. No. 344,734

Term of patent 14 years

U.S. Cl. D14—30



275,099

TELEPHONE INSTRUMENT

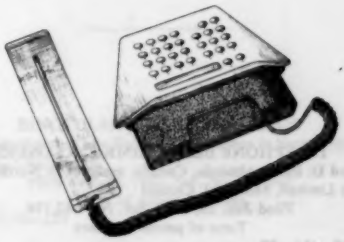
Guy Spilmont, 127 Avenue Jean-Baptiste Clément, Boulogne, France (92100); Georges Trimaille, Les Hauts du Val, Valdahon, France (25800), and Rémy Jacquet, Primevère, Le Locle, Switzerland (2400)

Filed Jan. 28, 1982, Ser. No. 343,565

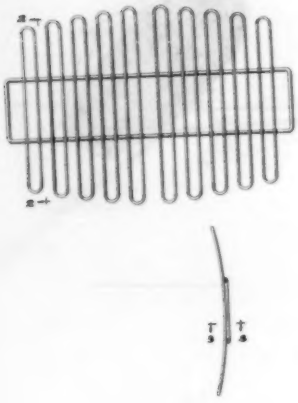
Claims priority, application France, Jul. 30, 1981, 812684

Term of patent 14 years

U.S. Cl. D14—53

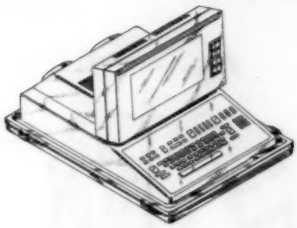


275,100
MICROWAVE ANTENNA GRID
Milton Mann, 1333 S. Beverly Glen, Los Angeles, Calif. 90024, and Richard P. Mann, 4273 Clear Valley Dr., Encino, Calif. 91436
Filed Jun. 4, 1982, Ser. No. 385,021
Term of patent 14 years
U.S. Cl. D14—86

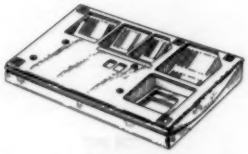


275,101
TELEPHONE BELL CHIME ENCLOSURE
Clifford D. Read, Almonte, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Jan. 25, 1982, Ser. No. 342,174
Term of patent 14 years
U.S. Cl. D14—92

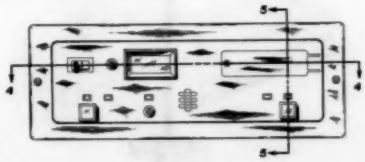
275,102
PORTABLE COMPUTER TERMINAL
Robert N. MacConnell, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 10, 1982, Ser. No. 356,675
Term of patent 14 years
U.S. Cl. D14—106



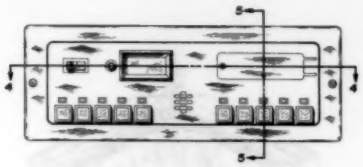
275,103
VIDEO TERMINAL TILT SWIVEL BASE
Christian C. Landry, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Nov. 23, 1981, Ser. No. 324,045
Term of patent 14 years
U.S. Cl. D14—114



275,104
CONTROL PANEL FOR FRYING COMPUTER
Gustav Kuschewski, St. Charles; William A. Joseph, Elburn; David W. Ek, Aurora, and Ronald R. Holt, Schaumburg, all of Ill., assignors to National Controls Corporation, Lombard, Ill.
Filed Sep. 10, 1981, Ser. No. 300,882
Term of patent 14 years
U.S. Cl. D14—114

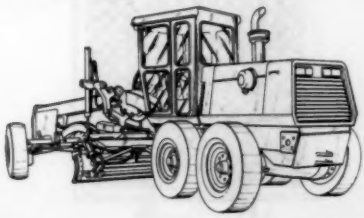


275,105
CONTROL PANEL FOR FRYING COMPUTER
Gustav Kuschewski, St. Charles; William A. Joseph, Elburn; David W. Ek, Aurora, and Ronald R. Holt, Schaumburg, all of Ill., assignors to National Controls Corporation, Lombard, Ill.
Filed Sep. 10, 1981, Ser. No. 300,883
Term of patent 14 years
U.S. Cl. D14—115

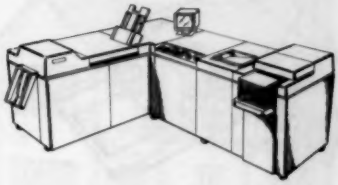


275,106
MOTOR HOUSING
Arthur S. Hart, Westminster, Calif., assignor to John D. McCarry, El Toro, Calif.
Filed Dec. 21, 1981, Ser. No. 332,806
Term of patent 14 years
U.S. Cl. D15—5

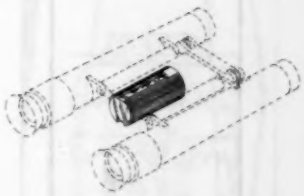
275,107
MOTOR GRADER VEHICLE
Wesley I. Crabiel, Belgrade Lakes, Me., and Lawrence E. Barbera, San Francisco, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Jun. 30, 1980, Ser. No. 164,413
Term of patent 14 years
U.S. Cl. D15—25



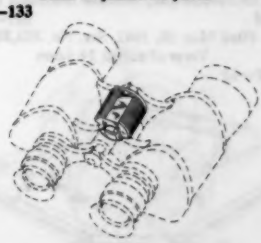
275,108
REPRODUCTION MACHINE
Daniel T. Noonan, Irving, Tex., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 8, 1982, Ser. No. 355,412
Term of patent 14 years
U.S. Cl. D16—30



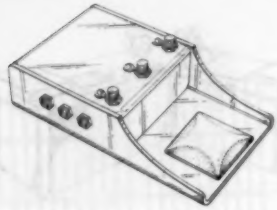
275,109
BINOCULAR ADJUSTMENT KNOB
Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Sep. 30, 1983, Ser. No. 537,962
Term of patent 14 years
U.S. Cl. D16—133



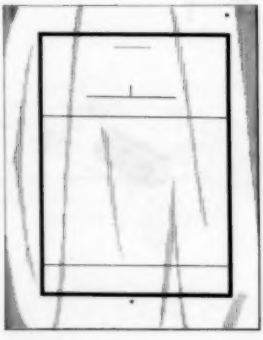
275,110
BINOCULAR ADJUSTMENT KNOB
Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Sep. 30, 1983, Ser. No. 537,963
Term of patent 14 years
U.S. Cl. D16—133



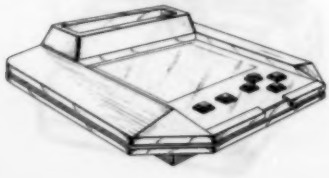
275,111
ELECTRONIC TIMBRE CONTROLLER FOR MUSICAL INSTRUMENTS
Emmett H. Chapman, 8320 Yucca Trail, Los Angeles, Calif. 90046
Filed Mar. 19, 1982, Ser. No. 359,930
Term of patent 14 years
U.S. Cl. D17—20



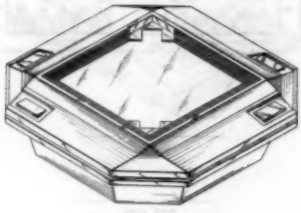
275,112
THESIS PAPER TEMPLET
Lynn A. Ness, 20685 SW. 90th, Tualatin, Oreg. 97062
Filed Oct. 20, 1981, Ser. No. 312,951
Term of patent 14 years
U.S. Cl. D19—37



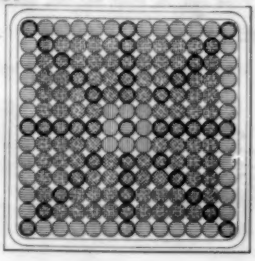
275,113
DESIGN FOR CARTRIDGE-BASED ELECTRONIC GAME HOUSING
James C. Wickstead, Pitney Rd. and W. Main St., Mendham, N.J. 07945
Filed May 28, 1982, Ser. No. 383,381
Term of patent 14 years
U.S. Cl. D21—13



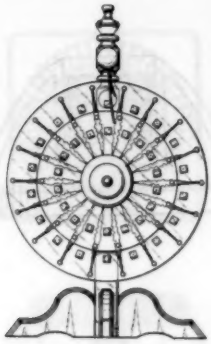
275,114
ELECTRONIC GAME HOUSING
James C. Wickstead, Pitney Rd. and W. Main St., Mendham, N.J. 07945
Filed May 28, 1982, Ser. No. 383,382
Term of patent 14 years
U.S. Cl. D21—13



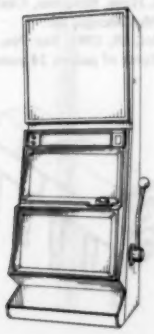
275,115
GAME BOARD
Lawrence T. Jones, Playa Del Rey; Anson Sims, Granda Hills, and Richard F. M. Conroy, Woodland Hills, all of Calif., assignors to California R & D Center, Culver City, Calif.
Filed Feb. 12, 1982, Ser. No. 348,303
Term of patent 14 years
U.S. Cl. D21—34



275,116
DOUBLE ROULETTE WHEEL
Clinton Mickens, Los Angeles, Calif., assignor to Vance J. Baham, Inglewood, Calif.
Filed Jul. 19, 1982, Ser. No. 399,547
Term of patent 14 years
U.S. Cl. D21—40



275,117
SLOT MACHINE
Joseph R. Heywood, Chorleywood, England, assignor to Ainsworth Nominees Pty. Ltd., Rosebery, Australia
Filed Jul. 13, 1982, Ser. No. 397,933
Claims priority, application Australia, May 18, 1982, 0412/82
Term of patent 14 years
U.S. Cl. D21—38



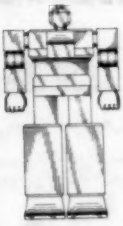
275,118
TOY DOLL HOUSE
Russell C. Edmisson, Manhattan Beach; Felix Griauzde, San Pedro, both of Calif., and Randall J. Jacobs, New Baltimore, Mich., assignors to CPG Products Corp., Minneapolis, Minn.
Filed Jun. 7, 1982, Ser. No. 385,605
Term of patent 14 years
U.S. Cl. D21—114

275,119
TOY HOUSE
Charlotte A. Eicher, Fort Mitchell, Ky., assignor to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 27, 1982, Ser. No. 343,035
Term of patent 14 years
U.S. Cl. D21—115

275,120
TOY HOUSE
Thomas P. Osborne, Cincinnati, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 27, 1982, Ser. No. 343,036
Term of patent 14 years
U.S. Cl. D21—115

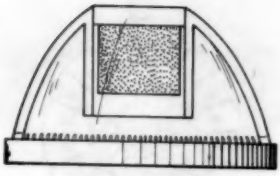
275,121
TOY HOUSE
Thomas P. Osborne, Cincinnati, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio
Filed Jan. 27, 1982, Ser. No. 343,038
Term of patent 14 years
U.S. Cl. D21—115

275,122
TOY DOLL
Katsushi Murakami, Tokyo, Japan, assignor to Bandai Co., Ltd., Japan
Filed Mar. 12, 1982, Ser. No. 357,411
Term of patent 14 years
U.S. Cl. D21—150

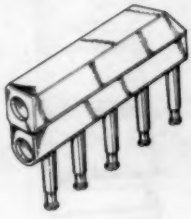


275,123
BALANCING WEIGHT FOR HAND FIREARM BARRELS
Ronny S. Nilsson, P1 4165, S-281 00 Hässleholm, Sweden
Filed Sep. 27, 1982, Ser. No. 423,590
Claims priority, application Sweden, Apr. 22, 1982, 82-1043
Term of patent 14 years
U.S. Cl. D22—7

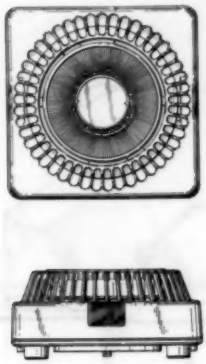
275,124
VENTED FLOOR-MODEL ROACH TRAP
Carl E. Carlsen, Rutledge Hotel, 161 Lexington Ave., New York, N.Y. 10016
Filed Aug. 27, 1982, Ser. No. 412,115
Term of patent 14 years
U.S. Cl. D22—19



275,125
COMBINED WASHER AND ASPIRATOR DEVICE FOR A SOLID BODY MEMBER
Frank Bing, Jr., Buffalo Grove; Paul L. Eck, Deerfield, both of Ill., and Tommy B. Haas, Riverton, Utah, assignors to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 28, 1981, Ser. No. 315,689
Term of patent 14 years
U.S. Cl. D23—40



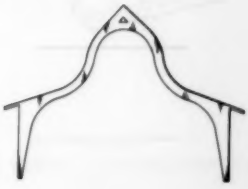
275,126
AIR CLEANER
Tak T. Tse, Kowloon, Hong Kong, assignor to Motor Electric Manufacturing Co., Ltd., Kowloon, Hong Kong
Filed Dec. 7, 1982, Ser. No. 447,644
Claims priority, application United Kingdom, Jun. 7, 1982, 1007133
Term of patent 14 years
U.S. Cl. D23—149



275,127
CURETTE
Edward K. Edwards, 10091 NW. 39th St. Ct., Coral Springs, Fla. 33065
Filed Jul. 2, 1981, Ser. No. 279,807
Term of patent 14 years
U.S. Cl. D24—26

275,128
EYE DROP DISPENSER
Delford O. Dougherty, Cleveland, Ohio, assignor to St. Luke's Hospital, Cleveland, Ohio
Filed Apr. 29, 1982, Ser. No. 373,037
Term of patent 14 years
U.S. Cl. D24—66

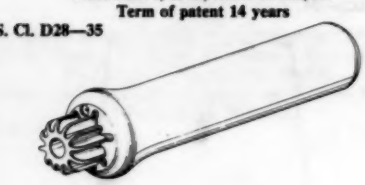
275,129
ARCHITECTURAL SUPPORT TRUSS
Carl E. Phillips, 1411 S. Brown, Little Rock, Ark. 72204
Filed Sep. 20, 1982, Ser. No. 419,745
Term of patent 14 years
U.S. Cl. D25—61

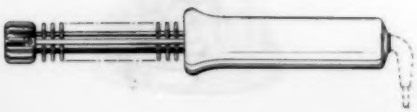


275,130
COMBINED LAMP AND METER
James M. Sovalko, 807 Center St., Throop, Pa. 18512
Filed Apr. 9, 1981, Ser. No. 252,337
Term of patent 14 years
U.S. Cl. D26—94

275,131
COMB
Gabriel E. Pascual, 1111 Bishop St., Rm. 1, Honolulu, Hi. 96813
Filed Mar. 1, 1982, Ser. No. 353,569
Term of patent 14 years
U.S. Cl. D28—30

275,132
RETRACTABLE HAIR CURLING BRUSH OR SIMILAR ARTICLE
Gary E. Van Deursen, Upper Saddle River, N.J., assignor to General Electric Company, New York, N.Y.
Filed Feb. 8, 1982, Ser. No. 346,885
Term of patent 14 years
U.S. Cl. D28—35

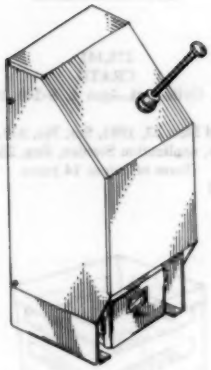




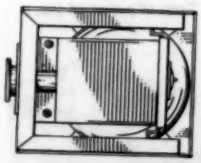
275,133
COSMETIC COMPACT
Brian Davey, North Shields, England, assignor to Lion Brush Works Limited, Newcastle-upon-Tyne, England
Filed Jun. 18, 1982, Ser. No. 389,804
Claims priority, application United Kingdom, Dec. 21, 1981, 1004323; Jan. 13, 1982, 1004593
Term of patent 14 years
U.S. Cl. D28—77

275,134
EYE SHADOW COMPACT
Emma Rossetti, Via Visconti di Modrone 28, Milan, and Grazia Rossetti, Residenza delle Querce, Milano 2, Segrate, Milan, both of Italy
Filed Sep. 21, 1981, Ser. No. 304,194
Claims priority, application Italy, Mar. 31, 1981, 21349 B/81
Term of patent 14 years
U.S. Cl. D28—80

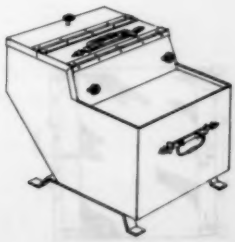
275,135
COMBINED BATTERY OPERATED EXPLOSION DETECTION AND SUPPRESSION UNIT FOR INDUSTRIAL STORAGE ENCLOSURES
Joseph P. Gillis, Westboro, Mass., assignor to Kidde, Inc., Saddle Brook, N.J.
Filed Dec. 18, 1981, Ser. No. 332,084
Term of patent 14 years
U.S. Cl. D29—2



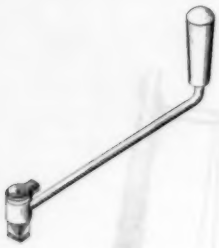
275,136
COMBINED BAG AND BAG SUPPORT FOR AN UPRIGHT VACUUM CLEANER
William D. Bowers, Avon, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio
Filed Sep. 21, 1981, Ser. No. 303,890
Term of patent 14 years
U.S. Cl. D32—22



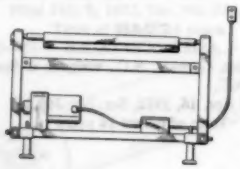
275,137
ASH RECEPTACLE
Tommy D. Scoggins, Graham, N.C., assignor to Scoggins Mfg. Inc., Graham, N.C.
Filed Apr. 16, 1982, Ser. No. 369,267
Term of patent 14 years
U.S. Cl. D34—7

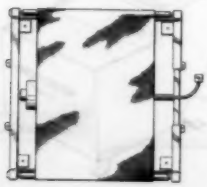


275,138
HANDLE FOR A WINCH OR WINDLASS
Walter H. Bacon, North Haven, Conn., assignor to W. Baco Ltd., North Haven, Conn.
Filed Mar. 20, 1981, Ser. No. 245,967
Term of patent 14 years
U.S. Cl. D34—33

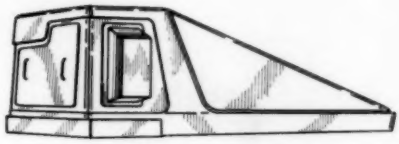


275,139
APPARATUS FOR TURNING A PERSON CONFINED TO A BED
Torsten Persson, Havstenssund 7583, Grebbestad, Sweden (450 81)
Filed Jan. 18, 1982, Ser. No. 340,247
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 12 592
Term of patent 14 years
U.S. Cl. D34—33

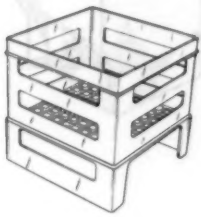




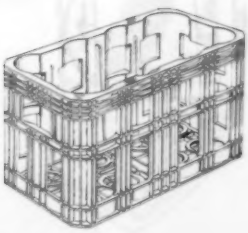
275,140
ACCESS PLATFORM HOUSING
Michael A. Crawforth, Sunderland, England, assignor to Coles Cranes Limited, Sunderland, England
Filed Dec. 9, 1981, Ser. No. 328,981
Claims priority, application United Kingdom, Jun. 15, 1981, 1,000,982
Term of patent 14 years
U.S. Cl. D34—37



275,141
CRATE
Kjell Andersson, Gyllenlackvägen 1, S-240 21 Löddeköpinge, Sweden
Filed Dec. 22, 1981, Ser. No. 333,420
Claims priority, application Sweden, Jun. 23, 1981, 81-1436
Term of patent 14 years
U.S. Cl. D34—40



275,142
BOTTLE CASE
Thomas E. Torokvei, Simi Valley, Calif., assignor to Scepter Manufacturing, Simi Valley, Calif.
Filed Feb. 25, 1982, Ser. No. 352,260
Term of patent 14 years
U.S. Cl. D34—40



275,143
CURTAIN FABRIC
Ellis I. Toder, 341 Militia Hill Rd., Fort Washington, Pa. 19034
Filed Mar. 1, 1982, Ser. No. 353,033
Term of patent 14 years
U.S. Cl. D47—6 E

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF AUGUST, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Seidman, Martin; and Niekamp, Carl W., 4,465,521, Cl. 127-36.000.

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Terae, Nobuyuki; and Abe, Akira, 4,465,849, Cl. 556-450.000.

Abe, Masahiro: *See*—
Takeuchi, Koji; Ito, Nobuo; Abe, Masahiro; and Hirai, Kiyomiki, 4,465,830, Cl. 528-117.000.

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Bollinger, Steven R.; and Vaughn, Thomas D., 4,465,045, Cl. 123-360.000.

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Wittman, Robert H.; Adkins, David E.; and Haws, Ronnie E., 4,465,104, Cl. 138-89.000.

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Negishi, Akira; and Nozaki, Ken, 4,465,576, Cl. 204-192.00E.

Agfa-Gevaert Aktiengesellschaft: *See*—
Gerum, Johannes; Nippe, Burkhard; Kober, Heinrich; and Kohler, Robert, 4,465,608, Cl. 252-62.540.
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Garg, Diwakar; and Miller, Robert N., 4,465,587, Cl. 208-87.000.
Milligan, Barton, 4,465,876, Cl. 568-940.000.

Aisan Industry Co., Ltd.: *See*—
Nakamura, Norihiko; Katou, Takashi; Itoh, Takaaki; and Morino, Toshiharu, 4,465,642, Cl. 261-44.00C.

Aisan Kogyo Kabushiki Kaisha: *See*—
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Toyoda, Hiroaki; Kinbara, Minoru; and Nakai, Akira, 4,465,285, Cl. 277-25.000.
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Mattock, Patrick; and Aitchison, Gordan F., 4,465,574, Cl. 204-180.00R.

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Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamanaka, Shigeru, 4,465,631, Cl. 260-239.100.

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Gorike, Rudolf, 4,466,117, Cl. 381-26.000.

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Akzona Incorporated: *See*—
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Alger, Jeffrey L.: *See*—
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Allen, Craig E.: *See*—
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Allen, Raymond B., heir: *See*—
Allen, Richard J.; Allen, Raymond B., heir; and Allen, Alma L., heir, 4,465,259, Cl. 251-304.000.

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Bobbio, Stephen M.; Flanigan, Marie C.; and Thrun, Kenneth M., 4,465,552, Cl. 156-643.000.
Roberts, William J., 4,465,958, Cl. 318-347.000.
Sokolich, James M., 4,465,972, Cl. 324-158.00F.
Sorensen, Ian W., 4,465,804, Cl. 524-505.000.
Wilensky, Barry F.; and Maggi, Joseph A., 4,466,014, Cl. 358-10.000.

Allied Oil & Supply, Inc.: *See*—
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Alltrade Inc.: *See*—
Hillinger, George, 4,465,113, Cl. 144-193.00D.

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Voisine, Leo G., 4,465,096, Cl. 137-614.040.

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Duclaux, Daniel; Boinet, Roger; Gerphagnon, Jean-Louis; and Baghe, Jean, 4,465,578, Cl. 204-245.000.

Amato, Gloria. Apparatus for handling single sheets delivered in succession. 4,465,270, Cl. 271-198.000.

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Godschalk, Louis A., Jr.; and Bordelean, Nelson J., 4,465,651, Cl. 264-161.000.

American Carbons, Inc.: *See*—
Bowen, Mack D.; and Purdy, Kenneth R., 4,465,556, Cl. 202-99.000.

American Chemical & Refining Company, Inc.: *See*—
Fletcher, Augustus; Cockayne, David N.; and Moriarty, William L., 4,465,564, Cl. 204-44.000.
American Cyanamid Company: *See*—
Lindsley, John F., 4,465,789, Cl. 502-255.000.
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American Safety Flight Systems, Inc.: *See*—
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American Standard Inc.: *See*—
Bateman, John L.; and Mitchell, Stanley J., 4,465,305, Cl. 281-31.000.
Uhl, Robert J., 4,465,174, Cl. 198-361.000.
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AMP Incorporated: *See*—
Asick, John C.; Ritchie, Leon T.; and Zell, Dale R., 4,464,832, Cl. 29-839.000.
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,464,817, Cl. 29-33.00M.
Lockard, Joseph L., 4,466,050, Cl. 362-307.000.
Long, Clarence S., Jr., 4,465,176, Cl. 198-400.000.
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Anderson, Robert A., to Lucas Industries Limited. Pin sliding disc brake. 4,465,164, Cl. 188-73.440.
Anderson Strathclyde PLC: *See*—
Brownlie, James, 4,465,319, Cl. 299-42.000.
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Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., 4,464,908, Cl. 62-235.100.
Andrews, Harold E.; and Howe, Spencer D., to Hughes Aircraft Company. Seeker gyroscope having reduced cross-coupling between rotor spin and precession. 4,464,943, Cl. 74-5.460.
Andro, Jean; and Charbonnel, Alain, to Stein Industrie. Device for reducing the thermal stresses in the bottom of a vertical heat exchanger. 4,465,127, Cl. 165-81.000.
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Anthracycline glycosides use and compositions containing same. 4,465,671, Cl. 424-180.000.
Anthony, Rayford G.; and Thomas, P. E., to Summit Gas Systems Pte. Ltd. Catalytic conversion of methanol, dimethyl ether and mixtures thereof to a hydrocarbon product rich in iso-C_4 compounds and new catalysts therefor. 4,465,889, Cl. 585-640.000.
Aoki, Akihiko: *See*—
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, 4,465,509, Cl. 71-119.000.
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Aomi, Hideki: *See*—
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Aoyagi, Edward I., to Chevron Research Company. Insecticidal and fungicidal 1-alkyl-5-alkylsulfonyl-4-chloropyrazole-3-yl-(thio)phosphates and (thio)phosphonates. 4,465,675, Cl. 424-200.000.
Aoyagi, Edward I., to Chevron Research Company. Broad spectrum fungicides. 4,465,690, Cl. 424-308.000.
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Aragona, Louis. Punching bag apparatus and supporting means. 4,465,273, Cl. 272-78.000.
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Austin, George K. Remote control locking system. 4,465,311, Cl. 292-144.000.
Autmotive Products plc: *See*—
Bainbridge, Wilfred N., 4,464,900, Cl. 60-591.000.
Avco Corporation: *See*—
Libertini, Zoltan L.; and Hartel, Edward O., 4,465,427, Cl. 415-1.000.
Averbeck, Dietrich: *See*—
Bisagni, Emile; Morin, Jacqueline; Averbeck, Dietrich; and Louis, Dubertret, 4,465,691, Cl. 424-256.000.
Avery, Grant D.; and Higgs, Jacob K., to Sprague Electric Company. Hall element with bucking current and magnet biases. 4,465,976, Cl. 324-251.000.
AvGavaar, Jairus. Typewriter instruction device. 4,465,477, Cl. 434-233.000.
Avocat, Jean P. Capacitor for medium-range voltage capacitive dividers. 4,466,047, Cl. 361-303.000.
Avraham, Bahry: *See*—
Moshe, Dolev; and Avraham, Bahry, 4,464,915, Cl. 70-52.000.
Ayukawa, Yukitada, to Pioneer Electronic Corporation. Device for reversing a recording medium for use with a recording and reproducing apparatus. 4,466,028, Cl. 360-71.000.
B. F. Goodrich Company, The: *See*—
Bok, Lowell D., 4,465,165, Cl. 188-218.0XL.
Porter, John P., 4,465,975, Cl. 324-205.000.
B/K Patent Development Co., Inc.: *See*—
Schwab, Pierre P., 4,466,048, Cl. 361-331.000.
Baasner, Bernd: *See*—
Forster, Heinz; Mues, Volker; Baasner, Bernd; Hagemann, Hermann; Ene, Ludwig; and Schmidt, Robert, 4,465,504, Cl. 71-88.000.
Baber, Samuel C.; and Porter, Vernon R., to Texas Instruments Incorporated. Selective deposition of composite materials. 4,465,716, Cl. 427-53.100.
Bacardit, Juan S., to Bendiberica S.A. Hydraulic distributor with a reaction biased control member. 4,465,098, Cl. 137-625.210.
Bach, Lloyd G.: *See*—
Myers, Lawrence R.; Gaiser, Robert F.; Lohraff, Larry G.; and Bach, Lloyd G., 4,464,899, Cl. 60-547.100.
Bacharach, Ottmar, to Gebr. Pfeiffer AG. Bowl mill pulverizer. 4,465,240, Cl. 241-121.000.
Baghe, Jean: *See*—
Duclaux, Daniel; Boinet, Roger; Gerphagnon, Jean-Louis; and Baghe, Jean, 4,465,578, Cl. 204-245.000.
Bailey, Paul C.: *See*—
Scholz, Hans; and Bailey, Paul C., 4,465,927, Cl. 250-213.0VT.
Bainbridge, Wilfred N., to Autmotive Products plc. Flow valve. 4,464,900, Cl. 60-591.000.
Bair, Eugene C., to General Electric Company. Method and apparatus for aligning laminations in a stator core. 4,464,826, Cl. 29-593.000.
Bajka, Imre; and Furrer, Robert, to Siemens Aktiengesellschaft Berlin & Munchen. Apparatus for applying solder to a printed-circuit board. 4,465,014, Cl. 118-114.000.
Bajusz, Sandor; Ronai, Andras; Szekely, Jozsef; Graf, Laszlo ; and Mohai nee Nagy, Zsuzsa, to Richter Gedeon Vegyeszeti Gyar. Pentapeptides and process for their preparation. 4,465,625, Cl. 260-112.50E.
Baker Oil Tools, Inc.: *See*—
Marquez, Vincent F., Jr.; Payne, R. Edward; Loveday, Thomas L.; and Gunn, Robert J., 4,465,139, Cl. 166-373.000.
Baker Perkins Holdings Limited: *See*—
Glover, William, 4,464,883, Cl. 53-550.000.
Bakker, John A.; and Solarz, Gilbert, to Illinois Tool Works Inc. Snap hook. 4,464,813, Cl. 24-237.000.
Balboni, Primo: *See*—
Lo Vullo, Ferdinando; Malvezzi, Emanuele; and Balboni, Primo, 4,465,560, Cl. 204-1.00R.
Baldensperger, Gary L.; and Real, John D., to Blackstone Corporation. Heat exchanger core assembly construction and methods of making the same. 4,465,129, Cl. 165-133.000.
Balfanz, Fredrick J., to C-R-O, Inc. Flame cutting machine with lost cut re-establishment. 4,466,069, Cl. 364-475.000.
Ball, Kenneth M. J., to Tweedy of Burnley Limited. Dough mixing for farinaceous foodstuff production. 4,465,700, Cl. 426-504.000.
Balliello, Paolo; Erzinger, Paul; and Tempel, Ernst, to Ciba-Geigy Corporation. Solid dye preparation of water soluble dyes with aliphatic aminocarboxylic acid. 4,465,491, Cl. 8-524.000.
Ballu, Patrick J., to Tecnoma. Spraying device, particularly for treatment of plants. 4,465,233, Cl. 239-77.000.
Bamer, Franz; Breuser, Erich; and Latsch, Reinhard, to Robert Bosch GmbH. Ignition plug with ignition chamber, and internal combustion engine provided therewith. 4,465,031, Cl. 123-260.000.
Bandel, Rudolf: *See*—
Mendle, Hans; Bandel, Rudolf; and Bozung, Hanns-Gunther, 4,464,902, Cl. 60-612.000.
Banker, Robert O., to Scientific-Atlanta, Inc. Sync suppression scrambling of television signals for subscription TV. 4,466,017, Cl. 358-120.000.
Banks, Robert L.: *See*—
Kukes, Simon G.; and Banks, Robert L., 4,465,890, Cl. 585-646.000.
Kukes, Simon G.; and Banks, Robert L., 4,465,891, Cl. 585-646.000.
Banks, William. Chuck. 4,465,289, Cl. 279-121.000.
Barakitis, Nikolaos; and Cohen, Sheppard, to GTE Products Corporation. Discharge lamp starting and operating circuit. 4,465,954, Cl. 315-104.000.
Barbecon Inc.: *See*—
Soroka, Walter G.; and Galda, Michael P., 4,465,188, Cl. 206-522.000.
Barber, Andrew C., to Ixo, Inc. Electronic telephone interface circuit. 4,465,903, Cl. 179-2.00C.
Barbier, Jean Y.; and Moran, Christopher J. Cranial insertion of surgical needle utilizing computer-assisted tomography. 4,465,069, Cl. 128-303.00B.
Barnwell, David E.: *See*—
Crofts, David; and Barnwell, David E., 4,465,717, Cl. 428-40.000.
Baron, Moshe I.; and Kossowsky, Ram, to Westinghouse Electric Corp. Reduced reflectivity member and ion implantation method of fabrication. 4,465,337, Cl. 350-164.000.
Barstow, Roger H. Hinged windshield for cycles. 4,465,315, Cl. 296-78.100.
Barthel, Richard C.; and Roy, Richard D., to Singer Company, The. Safety device. 4,466,040, Cl. 361-92.000.
Bartl, Herbert: *See*—
Waniczek, Helmut; Bartl, Herbert; and Kruger, Klaus, 4,465,028, Cl. 123-1.00A.
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, to Imperial Chemical Industries PLC. Diphenyl ether herbicides. 4,465,508, Cl. 71-103.000.
BASF Aktiengesellschaft: *See*—
Burkert, Hans; Hartmann, Juergen; Jung, Dietmar; Heide, Wilfried; Hartmann, Heinrich; and Spoor, Herbert, 4,465,599, Cl. 210-734.000.
Gliniorz, Lothar; Dobler, Peter; and Schoettle, Klaus, 4,465,247, Cl. 242-192.000.
Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, 4,465,628, Cl. 260-158.000.
Horner, Michael; and Irgang, Matthias, 4,465,787, Cl. 502-185.000.
Leyrer, Reinhold J.; Saenger, Dietrich; and Klinsmann, Uwe, 4,465,760, Cl. 430-325.000.
Linhart, Friedrich; Hartmann, Juergen; Jung, Dietmar; Hartmann, Heinrich; and Spoor, Herbert, 4,465,555, Cl. 162-168.200.
Neumann, Peter; Etzbach, Karl-Heinz; Eilingsfeld, Heinz; and Hoffmann, Gerhard, 4,465,857, Cl. 564-251.000.
BASF Wyandotte Corporation: *See*—
Kan, Peter T.; Schaaf, Robert L.; Medaugh, Lewis N.; and Volz, William E., 4,465,638, Cl. 260-453.0SP.
Schmolka, Irving R., 4,465,661, Cl. 424-49.000.
Schmolka, Irving R., 4,465,663, Cl. 424-62.000.
Bastian, Arlon L.; Goldfeder, Marc E.; and Hartung, Michael H., to International Business Machines Corporation. Method and apparatus for limiting data occupancy in a cache. 4,466,059, Cl. 364-200.000.
Bateman, John L.; and Mitchell, Stanley J., to American Standard Inc. Checkbook, checks, and check stubs. 4,465,305, Cl. 281-31.000.
Bates, Charles, Jr.: *See*—
Task, Harry L.; and Bates, Charles, Jr., 4,465,347, Cl. 350-538.000.
Batz, Gary C.: *See*—
McIntire, Ronald A.; and Batz, Gary C., 4,464,936, Cl. 73-705.000.
Baucke, Friedrich G. K.; Krause, Dieter; Metz, Bernd; Paquet, Volker; and Zauner, Johannes, to JENAer Glaswerk Schott & Gen. Electrochromic mirrors. 4,465,339, Cl. 350-357.000.
Bauer, Hanns Georg; Zoliner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, to Arc Technologies Systems Ltd. Electrode for arc furnaces. 4,466,105, Cl. 373-93.000.
Baum, Burton M.; and Stange, Hugo, to FMC Corporation. Anticholinergic drugs. 4,465,834, Cl. 546-127.000.
Baumann, Erich; Eisenkolb, Klaus; and Morawietz, Werner, to Voest-Alpine Aktiengesellschaft. System for handling vehicles of a revolving cableway in a parking station. 4,465,417, Cl. 414-235.000.
Baumgartner, Siegfried; and Zaske, Erwin, to Krauss-Maffei Aktiengesellschaft. Device for suspending a scraper blade for the displacement of material upon a surface. 4,465,376, Cl. 366-139.000.
Baxter, Gary R.: *See*—
Crook, Edward J., Jr.; and Baxter, Gary R., 4,464,812, Cl. 24-122.600.
Baxter Travenol Laboratories, Inc.: *See*—
Richmond, Frank M.; Larson, Kenneth W.; and Miller, Robert A., 4,465,488, Cl. 604-414.000.
Bayer Aktiengesellschaft: *See*—
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans-P.; and Puls, Walter, 4,465,684, Cl. 424-250.000.
Buschhaus, Hans-Ulrich; Findeisen, Kurt; and Bock, Manfred, 4,465,836, Cl. 548-110.000.

Forster, Heinz; Mues, Volker; Baasner, Bernd; Hagemann, Hermann; Eue, Ludwig; and Schmidt, Robert, 4,465,504, Cl. 71-88.000.
Geisler, Klaus; Heins, Hans-Hermann; Coulon, Helmut; and Kriwalski, Reiner, 4,465,655, Cl. 423-240.000.
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,465,678, Cl. 424-244.000.
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, 4,465,680, Cl. 424-245.000.
Nielinger, Werner; Alewelt, Wolfgang; and Hermann, Karl H., 4,465,821, Cl. 528-335.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,839, Cl. 548-310.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,840, Cl. 548-310.000.
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,465,682, Cl. 424-248.570.
Waniczek, Helmut; Bartl, Herbert; and Kruger, Klaus, 4,465,028, Cl. 123-1.00A.
Wellner, Wolfgang; Pedain, Josef; and Gruber, Hermann, 4,465,826, Cl. 528-374.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Deicke, Axel, 4,465,942, Cl. 307-9.000.

Beckmann, Heinrich: *See*—
Saumweber, Eckart; Beckmann, Heinrich; and Ottersbach, Jens, 4,466,066, Cl. 364-426.000.

Beckmann, Klaus, to Gewerkschaft Eisenhutte Westfalia. Mine roof support unit. 4,465,406, Cl. 405-296.000.

Becton, Dickinson and Company: *See*—
Kashner, James S.; Klimbach, John K.; and Vendetti, Randall P., 4,465,485, Cl. 604-320.000.
Percarpio, Edward P., 4,465,200, Cl. 215-247.000.

Beecham Group Limited: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,465,689, Cl. 424-283.000.

Beer, Henri B.: *See*—
Nguyen, Thinh; Fresnel, Jean-Marie; and Beer, Henri B., 4,465,561, Cl. 204-58.500.

Bekefi, George, to United States of America, Air Force. Rippled-field magnetron apparatus. 4,465,953, Cl. 315-39.710.

Belitz, Fritz: *See*—
Rinn, Jurgen; and Belitz, Fritz, 4,465,349, Cl. 353-25.000.

Belke, Robert E., Jr.; and Shirk, Raymond A., to General Electric Company. Method of bonding a poly (vinylidene fluoride) solid to a solid substrate. 4,465,547, Cl. 156-629.000.

Belknap, William M.: *See*—
Girard, Donald J.; O'Dell, Robert R.; Chanasyk, Albert J.; and Belknap, William M., 4,466,058, Cl. 364-200.000.

Bell, Frank H., to Thoikol Corporation. Sector type initiator for artillery projectiles. 4,464,992, Cl. 102-275.000.

Bell & Howell Company: *See*—
Dorman, Isidore, 4,464,881, Cl. 53-520.000.

Bell, Ted A.; Cooksey, Timothy S.; and Lehner, Daniel F., to Pretty Products, Inc. Automotive floor mat having rigidifying sheet-form element. 4,465,720, Cl. 428-85.000.

Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, to ISF S.p.A. Ketoiminocephalosporin derivatives. 4,465,831, Cl. 544-26.000.

Beloit Corporation: *See*—
Bollani, Umberto F., 4,464,986, Cl. 100-163.00R.
Karr, Gerald W., 4,465,244, Cl. 242-72.100.

Ben Clements & Sons, Inc.: *See*—
Furutsu, Akira, 4,465,217, Cl. 227-67.000.

Bendiberica S.A.: *See*—
Bacardit, Juan S., 4,465,098, Cl. 137-625.210.

Bendix Corporation, The: *See*—
Deem, Brian C.; and Eslinger, Ralph G., 4,465,286, Cl. 277-81.00P.
Myers, Lawrence R.; Gaiser, Robert F.; Lohraff, Larry G.; and Bach, Lloyd G., 4,464,899, Cl. 60-547.100.
Tyler, Henry P., 4,464,976, Cl. 91-365.000.

Bendler, Hellmut; and Scheiderer, Gerrit, to Dynamit Nobel AG. Ignition device with amplifier charge. 4,464,990, Cl. 102-204.000.

Beneking, Heinz. Field effect transistor. 4,466,008, Cl. 357-22.000.

Bennett, James F., to GTE Products Corporation. Synchronization apparatus and method. 4,466,111, Cl. 375-111.000.

Benninghoven, Erich. Coal dust burner. 4,465,459, Cl. 431-284.000.

Beppu, Tatsuro: *See*—
Sadamasa, Tetsuo; Ichikawa, Osamu; and Beppu, Tatsuro, 4,465,543, Cl. 156-542.000.

Berg, Charles A. Compression loaded collapsible wheel. 4,465,321, Cl. 301-5.00R.

Berg, Peter G., to Texas Instruments Incorporated. Fuel system having low profile gasket heater. 4,465,053, Cl. 123-549.000.

Bergamaschi, Mario: *See*—
Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; and Bergamaschi, Mario, 4,465,841, Cl. 548-346.000.

Berger, Heinz W.: *See*—
Noe, Oskar; Noe, Andreas; Noe, Rolf; and Berger, Heinz W., 4,464,805, Cl. 15-102.000.

Berger, Joseph; Pfeifer, Josef; and Reinehr, Dieter, to Ciba-Geigy Corporation. Ethylenically unsaturated crosslinkable transparent polyamide. 4,465,823, Cl. 528-345.000.

Berry, Steven R. Anti-lift device for windshield wipers. 4,464,808, Cl. 15-250.200.

Berthold, Heinz, to Brueninghaus Hydraulik GmbH. Ball-jointed bearing arrangement of the piston heads in an axial piston machine. 4,465,394, Cl. 403-122.000.

Best, Robert M. Crypto microprocessor that executes enciphered programs. 4,465,901, Cl. 178-22.080.

Beta Engineering and Development Ltd.: *See*—
Sadeh, Yaacov, 4,464,839, Cl. 33-1.00M.

Bethlehem Steel Corp.: *See*—
Herman, Stewart T.; Pfeiffer, James B.; Sewald, Richard T., Sr.; and Sterner, Charles J., 4,465,597, Cl. 210-713.000.
Larson, Duane B., 4,464,959, Cl. 83-37.000.

Bhatia, Yog R., to A. B. Dick Company. Ink composition for ink jet printing. 4,465,800, Cl. 524-236.000.

Biancardi, Frank R.: *See*—
Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., 4,464,908, Cl. 62-235.100.

Billenstein, Siegfried; Gohlke, Fritz J.; Hille, Martin; and Bohm, Roland, to Hoechst Aktiengesellschaft. Modified etherified phenol/aldehyde condensation products and their use for breaking petroleum emulsions. 4,465,817, Cl. 525-507.000.

Bindel, Rudolf; and Kullen, Wilhelm, to Elring Dichtungswerke GmbH. Cylinder-head gasket for piston-type internal combustion engines. 4,465,287, Cl. 277-235.00B.

Bioresearch S.p.A.: *See*—
Gennari, Federico, 4,465,672, Cl. 424-180.000.

Biosound, Inc.: *See*—
Helmstetter, Paul M., 4,465,978, Cl. 328-168.000.

Bisagni, Emile; Morin, Jacqueline; Averbeck, Dietrich; and Louis, Dubertret, to Institut National de la Sante et de la Recherche Medicale. (3,4';4,5)-Pyrido (3,2-g)-furo coumarins or (3,4-h) pyrido psoralens process of preparation, applications in cosmetology and in therapeutics, and cosmetological and pharmaceutical compositions with them. 4,465,691, Cl. 424-256.000.

Bischoff, Hans, to MTU Motoren- und Turbinen-Union Muenchen GmbH. Flow duct structure for reducing secondary flow losses in a bladed flow duct. 4,465,433, Cl. 416-223.00A.

Biss, Michael S.: *See*—
Lang, Clifford H.; and Biss, Michael S., 4,465,253, Cl. 248-75.000.

Biswas, Bimal K.: *See*—
Zoschak, Robert J.; and Biswas, Bimal K., 4,466,082, Cl. 366-101.000.

Bitsch, Gunter: *See*—
Ebert, Heinrich; Noe, Manfred; Wind, Kurt; and Bitsch, Gunter, 4,464,850, Cl. 36-44.000.

Bituma-Stor, Inc.: *See*—
Dillman, Bruce A., 4,465,420, Cl. 414-332.000.

Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., to Diamond International Corporation. Construction of universal egg cell cushion. 4,465,225, Cl. 229-2.5EC.

Bjune, Arne; Boe, Gunnar H.; and Danielssen, Tore. Method of producing zinc from chloride solutions which contain chiefly iron, copper and zinc. 4,465,569, Cl. 204-115.000.

BL Technology Limited: *See*—
Stubbs, Peter W. R., 4,464,952, Cl. 74-690.000.

Black & Decker Inc.: *See*—
Cox, Alan W., 4,465,276, Cl. 272-137.000.

Blackstone Corporation: *See*—
Baldensperger, Gary L.; and Real, John D., 4,465,129, Cl. 165-153.000.

Blaha, Erich: *See*—
Lang, Walter; Muchel, Franz; and Blaha, Erich, 4,465,348, Cl. 351-211.000.

Blake, Larry W., to Innovative Surgical Products, Inc. Single piece wound drain catheter. 4,465,481, Cl. 604-280.000.

Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, to Didier Engineering GmbH; and Voest-Alpine Aktiengesellschaft. Gas transferring apparatus in coke oven. 4,465,557, Cl. 202-241.000.

Blaser, Richard F. Energy conversion cycle for internal combustion engine and apparatus for carrying out the cycle. 4,465,033, Cl. 123-295.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Curable masses producing fluorosilicone elastomers and coatings. 4,465,805, Cl. 524-765.000.

Blonn, John M.: *See*—
Carr, Donald G.; Blonn, John M.; and Milawski, Leonard E., 4,465,792, Cl. 521-138.000.

Blust, Donald L., Sr.; Pope, Jerome J.; and Troxell, Lawrence L., Jr., to Pope Company, Inc., The. Methods and apparatus for threading a pipe. 4,465,422, Cl. 414-433.000.

Bobbio, Stephen M.; Flanigan, Marie C.; and Thrun, Kenneth M., to Allied Corporation. Method of selectively etching silicon dioxide with SF_6/nitriding component gas. 4,465,552, Cl. 156-643.000.

Bochumer Eisenhuette Heintzmann GmbH & Co KG: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Domanski, Lothar, 4,465,404, Cl. 405-288.000.

Bock, Manfred: *See*—
Buschhaus, Hans-Ulrich; Findeisen, Kurt; and Bock, Manfred, 4,465,836, Cl. 548-110.000.

Boden, Richard M.; Temes, Steven D.; Tyszkiewicz, Theodore J.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Branched C_{13}-alk-1-en-5-ones, use thereof in perfumery, process for preparing same and intermediates used in said process. 4,465,863, Cl. 568-417.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Pospisil, Peter, 4,464,940, Cl. 73-864.210.

Boe, Gunnar H.: *See*—
Bjune, Arne; Boe, Gunnar H.; and Danielsen, Tore, 4,465,569, Cl. 204-115.000.
Boeing Company, The: *See*—
Ledlow, Jimmie E.; and Stoops, Paul M., 4,465,220, Cl. 228-50.000.
Boggs, Samuel D.; and Miller, Clement J. Method and apparatus for bending corrugated pipe. 4,464,923, Cl. 72-307.000.
Bogner, Bruce F., to RCA Corporation. Radial transmission cancellation device. 4,466,090, Cl. 369-126.000.
Bohm, Roland: *See*—
Billenstein, Siegfried; Gohlke, Fritz J.; Hille, Martin; and Bohm, Roland, 4,465,817, Cl. 525-507.000.
Bohnes, Karlheinz: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Domanski, Lothar, 4,465,404, Cl. 405-288.000.
Boidet, Jacques: *See*—
Jacquet, Maurice; and Boidet, Jacques, 4,465,124, Cl. 165-67.000.
Boinet, Roger: *See*—
Duclaux, Daniel; Boinet, Roger; Gerphagnon, Jean-Louis; and Baghe, Jean, 4,465,578, Cl. 204-245.000.
Bok, Lowell D., to B. F. Goodrich Company, The. Brake apparatus. 4,465,165, Cl. 188-218.0XL.
Bolis, Goffredo: *See*—
Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, 4,465,831, Cl. 544-26.000.
Bollani, Umberto F., to Beloit Corporation. Device for reducing the vibration of a press section constituted by two or more rolls pressed one against the other in a paper manufacturing machine. 4,464,986, Cl. 100-163.00R.
Bollinger, Steven R.; and Vaughn, Thomas D., to ACF Industries, Inc. Pulsed bleed air throttle position controller. 4,465,045, Cl. 123-360.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,465,142, Cl. 172-7.000.
Bonasso, Samuel G. Tension arch structure. 4,464,803, Cl. 14-20.000.
Bongers, Bernd; and Brand, Konrad, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Safety steering column assembly for automobiles. 4,465,301, Cl. 280-777.000.
Boone, Jacob J., to Nordson Corporation. Liquid dispensing device. 4,465,212, Cl. 222-504.000.
Boone, Philip. Orthopedic device and method for supporting and treating portions of the body. 4,465,064, Cl. 128-88.000.
Bordelean, Nelson J.: *See*—
Godschalk, Louis A., Jr.; and Bordelean, Nelson J., 4,465,651, Cl. 264-161.000.
Borg-Warner Chemicals, Inc.: *See*—
Hornbeck, Robert L., 4,465,449, Cl. 425-131.100.
Borg-Warner Corporation: *See*—
Chang, Franklin S., 4,465,738, Cl. 428-426.000.
Gatewood, Sidney U., 4,465,172, Cl. 192-106.200.
Borshchevsky, Alexander: *See*—
Feigelson, Robert S.; and Borshchevsky, Alexander, 4,465,545, Cl. 156-616.00R.
Bortz, Paul B., to Vermont Stove Company, Inc. Fireplace stove assembly. 4,465,055, Cl. 126-123.000.
Bos, Robert W., to Gusto Engineering B.V. Floating device for transshipment of cargo. 4,465,012, Cl. 114-266.000.
Bosch-Siemens Hausgeraete GmbH: *See*—
Leuschner, Udo; and Zinsberger, Alfons, 4,464,982, Cl. 99-287.000.
Boschan, Robert H.: *See*—
Lau, Kreisler S. Y.; and Boschan, Robert H., 4,465,833, Cl. 544-246.000.
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans P.; and Puls, Walter, to Bayer Aktiengesellschaft. 3,4,5-Trihydroxypiperidine compounds and their use as medicaments and in animal nutrition. 4,465,684, Cl. 424-250.000.
Boskamp, Jelles V., to Lever Brothers Company. Built liquid detergent compositions. 4,465,619, Cl. 252-540.000.
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty's Government of the. Thermoplastic copolymer of poly(bisphenol A terephthalate) copolycarbonate and poly(bisphenol A isophthalate) copolycarbonate. 4,465,814, Cl. 525-439.000.
Boston, Farwell C.: *See*—
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,465,614, Cl. 252-364.000.
Boujet, Jean-Pierre; Gaille, Gerard; and Jousselin, Charles, to Compagnie Industrielle Des Telecommunications. Temperature-stabilized microwave filter. 4,465,989, Cl. 333-209.000.
Bourrel, Maurice; Sanchez, Alain; and Soula, Jean-Claude, to Societe Nationale Elf Aquitaine. Microemulsion of water in a liquid fuel. 4,465,494, Cl. 44-51.000.
Bowen, Mack D.; and Purdy, Kenneth R., to American Carbons, Inc. Pyrolysis system with hot gas recirculation. 4,465,556, Cl. 202-99.000.
Bowman, Peter; and Frieze, Allan S., to Warner-Lambert Company. Disposable razor. 4,464,835, Cl. 30-84.000.
Boyaciginller, Ziya G.; Brubaker, James L.; and Zis, Jerome C., to Intersil, Inc. High accuracy digital-to-analog converter. 4,465,996, Cl. 340-347.0DA.
Boyadjieff, George I.; and Campbell, Andrew B., to Varco International, Inc. Well casing jack mechanism. 4,465,131, Cl. 166-77.000.
Boyan, Gerard E.; and Maleri, Enso J., to Perkin Elmer Corporation, The. Wafer prealigner using pulsed vacuum spinners. 4,466,073, Cl. 364-559.000.
Boyce, Clarence A., Jr.; and Voetsch, Harold E. Gear shaping tool reconstruction. 4,465,411, Cl. 407-28.000.
Bozung, Hanns-Gunther: *See*—
Mendle, Hans; Bandel, Rudolf; and Bozung, Hanns-Gunther, 4,464,902, Cl. 60-612.000.
Braasch, Gerd. Method for bonding grinding material onto a grinding disk and a grinding disk so made. 4,465,548, Cl. 156-630.000.
Braillon & Cie: *See*—
Braillon, Philibert M., 4,465,993, Cl. 335-287.000.
Braillon, Philibert M., to Braillon & Cie. Magnetic holder. 4,465,993, Cl. 335-287.000.
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Brauer, Rudiger; and Petersen, Dirk, 4,465,438, Cl. 417-386.000.
Brand, Konrad: *See*—
Bongers, Bernd; and Brand, Konrad, 4,465,301, Cl. 280-777.000.
Brandstatter, Erwin: *See*—
Heissenberger, Oswald; and Brandstatter, Erwin, 4,464,796, Cl. 2-168.000.
Brauer, Rudiger; and Petersen, Dirk, to Bran & Lubbe GmbH. Piston diaphragm pump. 4,465,438, Cl. 417-386.000.
Braun, William V.: *See*—
Moore, Morris A.; and Braun, William V., 4,466,001, Cl. 340-825.080.
Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company, The. Preparation of maleic anhydride. 4,465,846, Cl. 549-260.000.
Brennan, Michael E.; and Speranza, George P., to Texaco Inc. Aromatic polyester polycarbonate polyols derived from polyethylene terephthalate residues. 4,465,793, Cl. 521-172.000.
Breslow, Donald H., to Itek Corporation. Optically multiplexed encoder system. 4,465,928, Cl. 250-231.0SE.
Brettbacher, Franz; Moshammer, Karl; Rom, Ernst; and Hirschmanner, Franz, to Voest-Alpine Aktiengesellschaft. Coiler-furnace combination. 4,465,912, Cl. 219-10.49A.
Bretton Patents Limited: *See*—
Carr, Roderick R., 4,465,035, Cl. 123-52.0MB.
Breuser, Erich: *See*—
Bamer, Franz; Breuser, Erich; and Latsch, Reinhard, 4,465,031, Cl. 123-260.000.
Brice Ilotan Research Corporation: *See*—
Brice, Michael F.; and Natoli, Gaetano A., 4,465,697, Cl. 426-79.000.
Brice, Michael F.; and Natoli, Gaetano A., to Brice Ilotan Research Corporation. Coffee brewing apparatus and method. 4,465,697, Cl. 426-79.000.
Bridges, Charles D., to Combustion Engineering, Inc. Casing hanger collet. 4,465,133, Cl. 166-208.000.
Bridgestone Tire Company Limited: *See*—
Araki, Yusuke; and Oshima, Tsuginori, 4,465,531, Cl. 156-64.000.
Iwasawa, Shigeru, 4,465,388, Cl. 400-196.100.
Makino, Hisao; and Oshima, Tsuginori, 4,465,536, Cl. 156-133.000.
Bright, Gene M.; and Hauske, James R., to Pfizer Inc. Azahomoerythromycin D derivative and intermediates therefor. 4,465,674, Cl. 424-180.000.
Brinkhof, Joseph B.: *See*—
Snelgrove, Ronald C.; and Brinkhof, Joseph B., 4,465,039, Cl. 123-142.50E.
Brinkmann, Willi: *See*—
Stratmann, Josef; Urbye, Claus; and Brinkmann, Willi, 4,465,419, Cl. 414-328.000.
Brion, Harvey F.: *See*—
Minear, Ronald J.; Brion, Harvey F.; and Terbrack, William H., 4,465,907, Cl. 179-156.00R.
Bristol, Robert D. Crankless internal combustion engine. 4,465,042, Cl. 123-197.00R.
British Gas Corporation: *See*—
Stoves, Derek; and Hatley, John E., 4,465,202, Cl. 220-203.000.
Broadwell, James E., to United States of America, Air Force. Delta wing nozzle assembly for chemical lasers. 4,466,100, Cl. 372-89.000.
Broan Mf'g. Co., Inc.: *See*—
Wolbrink, David W.; Jonas, Kenneth J.; Butt, Roland E.; and Busch, Robert W., 4,465,256, Cl. 248-544.000.
Broccali, Giampietro: *See*—
Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, 4,465,831, Cl. 544-26.000.
Brodie, Ivor: *See*—
Westerberg, Eugene R.; and Brodie, Ivor, 4,465,934, Cl. 250-398.000.
Brook, Richard J.; and Wu, Suxing, to National Research Development Corporation. Sinterable fluorite oxide ceramics. 4,465,778, Cl. 501-104.000.
Brooke, Dana: *See*—
David, Stephen T.; Brooke, Dana; and Gallian, Claude E., 4,465,660, Cl. 424-15.000.
Brookes & Gatehouse Limited: *See*—
Fish, Michael J.; and Gill, Michael J., 4,464,842, Cl. 33-344.000.
Brooklyn Union Gas Company: *See*—
Nimke, Helmut E.; and Thomas, William R., 4,465,309, Cl. 285-373.000.
Brooks, Harold E.: *See*—
Gorman, Leonard F.; and Brooks, Harold E., 4,465,151, Cl. 177-133.000.
Brown, Daniel G.: *See*—
Motsinger, Donald L.; and Brown, Daniel G., 4,465,500, Cl. 65-3.430.
Browning, Eric J.: *See*—
Lewis, Wimor T.; and Browning, Eric J., 4,465,318, Cl. 299-1.000.

Brownlie, James, to Anderson Strathclyde PLC. Integrated cutter, breaker and haulage drive gearcase. 4,465,319, Cl. 299-42.000.

Brownscombe, Thomas F.; and Mango, Frank D., to Shell Oil Company. Reinforced polymer compositions and their preparation. 4,465,797, Cl. 523-216.000.

Brubaker, James L.: *See*—
Boyacigiller, Ziya G.; Brubaker, James L.; and Zis, Jerome C., 4,465,996, Cl. 340-347.0DA.

Bruce, Edward G. Cigarette case. 4,465,184, Cl. 206-261.000.

Brueninghaus Hydraulik GmbH: *See*—
Berthold, Heinz, 4,465,394, Cl. 403-122.000.

Brundage, Robert W. Fluid pressure device. 4,464,977, Cl. 91-376.00R.

Brunfeldt, Robert J. Glass inlet system for mass spectrometer. 4,465,930, Cl. 250-288.000.

Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,465,324, Cl. 308-3.800.

Brunninger, Manfred: *See*—
Theurer, Josef; Brunninger, Manfred; and Oellerer, Friedrich, 4,465,414, Cl. 414-21.000.

Brunton Company, The: *See*—
Kramer, Melvin G., 4,464,843, Cl. 33-363.00K.

Buban, Deborah L.: *See*—
Buban, Ray M.; and Buban, Deborah L., 4,465,208, Cl. 221-279.000.

Buban, Ray M.; and Buban, Deborah L. Chewing gum dispenser. 4,465,208, Cl. 221-279.000.

Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M. Method of heat- and moisture treatment of articles, for example, concrete articles, and an apparatus for accomplishing same. 4,464,845, Cl. 34-18.000.

Buchalter, Gilbert. Method of applying an electrode to the skin of a patient. 4,465,074, Cl. 128-639.000.

Buchan, William A.: *See*—
Howell, Jones V.; Miller, William R.; and Buchan, William A., 4,466,027, Cl. 360-66.000.

Buchel, Karl H.: *See*—
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, 4,465,680, Cl. 424-245.000.

Buchwald, Holger: *See*—
Knoke, Jurgen; Buchwald, Holger; and Fehlhaber, Jurgen, 4,465,723, Cl. 428-90.000.

Buckley, W. D.: *See*—
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,465,759, Cl. 430-321.000.

Budd Canada Inc.: *See*—
Snelgrove, Ronald C.; and Brinkhof, Joseph B., 4,465,039, Cl. 123-142.50E.

Budnik, Brian J.: *See*—
Long, James F.; and Budnik, Brian J., 4,465,966, Cl. 323-248.000.

Budzich, Tadeusz: *See*—
Gold, Harold; and Budzich, Tadeusz, 4,465,093, Cl. 137-498.000.

Buer, Jeffrey J.; and Williams, John P. Method of sorting and counting cans. 4,465,195, Cl. 209-704.000.

Buhrmann, Gerardus P.; and Steen, Adam, to Hoogovens Groep B.V. Method of producing steel by the LD process. 4,465,514, Cl. 75-60.000.

Bull, William: *See*—
Jordan, Richard; Bull, William; Ciardella, Robert L.; Taggart, Robert; and Holt, Frederick R., 4,466,033, Cl. 360-99.000.

Bullock, Geoffrey N.: *See*—
Wilson, Eric M.; and Bullock, Geoffrey N., 4,465,941, Cl. 290-54.000.

Bunn-O-Matic Corporation: *See*—
Stover, Kenneth W., 4,464,981, Cl. 99-280.000.

Burgemeister, Eduard A., to N.V. Optische Industrie "De Oude Delft". Method and apparatus for the detection of ionizing radiation. 4,465,932, Cl. 250-370.000.

Burkert, Hans; Hartmann, Juergen; Jung, Dietmar; Heide, Wilfried; Hartmann, Heinrich; and Spoor, Herbert, to BASF Aktiengesellschaft. Flocculants based on polymers containing water-soluble dialkylaminoneopentyl (meth)acrylates. 4,465,599, Cl. 210-734.000.

Burkhalter, David W.; and Kain, Maurits R., to Perkin-Elmer Corporation, The. Wafer handling mechanism. 4,465,416, Cl. 414-217.000.

Burroughs Corporation: *See*—
DeSantis, Alfred J.; and Schibinger, Joseph S., 4,466,061, Cl. 364-200.000.
Romania, Samuel R.; and Smith, Grant M., 4,465,130, Cl. 165-185.000.
Trethewey, Paul M., 4,466,088, Cl. 369-46.000.

Burroughs Wellcome Co.: *See*—
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,465,685, Cl. 424-258.000.

Burton, Charles G., to Chisholm-Ryder Company, Inc. Collector leaf construction for harvesting machine. 4,464,888, Cl. 56-330.000.

Bury, Michel: *See*—
Sorel, Alain; and Bury, Michel, 4,465,206, Cl. 221-94.000.

Busby, Bruce E., to Sony Corporation. Video disk player simulator, method and apparatus. 4,466,023, Cl. 360-55.000.

Busch, Robert W.: *See*—
Wolbrink, David W.; Jonas, Kenneth J.; Butt, Roland E.; and Busch, Robert W., 4,465,256, Cl. 248-544.000.

Buschbom, Floyd E.; and Hansen, Glen D., to Veda, Inc. Silo unloader. 4,465,409, Cl. 406-59.000.

Buschhaus, Hans-Ulrich; Findeisen, Kurt; and Bock, Manfred, to Bayer Aktiengesellschaft. Diisocyanates. 4,465,836, Cl. 548-110.000.

Buschulte, Winfried: *See*—
Mack, Robert; and Buschulte, Winfried, 4,464,907, Cl. 62-101.000.

Bussiere, Guy; and Huchette, Michel, to Roquette Freres. Syrup for candying, means for its preparation, its use and products so-obtained. 4,465,698, Cl. 426-102.000.

Butt, Roland E.: *See*—
Wolbrink, David W.; Jonas, Kenneth J.; Butt, Roland E.; and Busch, Robert W., 4,465,256, Cl. 248-544.000.

BWG Bergwerk- Und Walzwerk-Maschinenbau GmbH: *See*—
Noe, Oskar; Noe, Andreas; Noe, Rolf; and Berger, Heinz W., 4,464,805, Cl. 15-102.000.

Byrod, Eva K.; and Sjogren, John A., to Aktiebolaget Hasale. Process for the preparation of gastric acid neutralizing agents, gastric acid neutralizing agents, and a method for treating hyperacidity and disorders related thereto. 4,465,667, Cl. 424-156.000.

C. R. Bard, Inc.: *See*—
Meisch, Charles E., 4,465,479, Cl. 604-251.000.

C-R-O, Inc.: *See*—
Balfanz, Fredrick J., 4,466,069, Cl. 364-475.000.

C. Van der Lely N.V.: *See*—
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,465,142, Cl. 172-7.000.
van der Lely, Ary; and Rom, Cornelis J. G., 4,465,211, Cl. 222-166.000.

Cabot Corporation: *See*—
Stallings, John P., 4,465,159, Cl. 181-129.000.

Calder, Oliver J., to Graham, Phyllis. Adjustable spray nozzle. 4,465,236, Cl. 239-391.000.

Caldwell, Albert G.: *See*—
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,465,685, Cl. 424-258.000.

Caldwell, David L., to Owens-Illinois, Inc. Container orienting apparatus. 4,465,175, Cl. 198-399.000.

Calgon Carbon Corporation: *See*—
Greenbank, Michael; and Rosene, Michael R., 4,465,875, Cl. 568-916.000.

Cambridge, Edward L.; Loutfy, Raouf O.; and Withers, James C., to Atlantic Richfield Company. Aluminum production via the chlorination of partially calcined aluminum chloride hexahydrate. 4,465,659, Cl. 423-495.000.

Cammarano, Armando S.; and DiGiacomo, Giulio, to International Business Machines Corporation. Process for brazing. 4,465,223, Cl. 228-198.000.

Campbell, Andrew B.: *See*—
Boyadjieff, George I.; and Campbell, Andrew B., 4,465,131, Cl. 166-77.000.

Cancio, Leopoldo V.; and Wu, Pai-Chuan, to Clopay Corporation. Cross-tearable plastic films. 4,465,729, Cl. 428-167.000.

Cannella, Vincent D.: *See*—
Izu, Masatsugu; and Cannella, Vincent D., 4,464,823, Cl. 29-572.000.
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, 4,465,704, Cl. 430-292.000.

Canon Denshi Kabushihi Kaisha: *See*—
Yoshida, Shigeru; Osabe, Akira; and Hoashi, Takayuki, 4,466,037, Cl. 360-133.000.

Canon Kabushiki Kaisha: *See*—
Murakami, Hiroyasu; Hiramatsu, Akira; and Katsuma, Makoto, 4,465,355, Cl. 354-475.000.
Nakahata, Kimio, 4,465,359, Cl. 355-3.00R.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,465,750, Cl. 430-57.000.
Sumi, Akiyasu, 4,465,344, Cl. 350-429.000.
Takahashi, Yuji; Masaki, Hisaji; and Suzuki, Yasuhito, 4,466,006, Cl. 346-153.100.
Tamura, Yasuyuki, 4,465,939, Cl. 250-578.000.
Tanaka, Kazuo; and Suda, Shigeyuki, 4,465,342, Cl. 350-427.000.
Tohma, Hitoshi; Kimura, Tomohiro; and Ito, Hiroshi, 4,465,362, Cl. 355-15.000.
Yoshida, Masaaki; and Kataoka, Hiroyuki, 4,465,353, Cl. 354-415.000.
Yoshida, Shigeru; Osabe, Akira; and Hoashi, Takayuki, 4,466,037, Cl. 360-133.000.

Canterino, Peter J.; and Allen, Craig E., to Mobil Oil Corporation. Multidirectional orientation apparatus. 4,464,815, Cl. 26-72.000.

Cantu, Evangeline, to United States of America, Air Force. Metallic aid and technique in fitting voice prosthesis. 4,465,068, Cl. 128-303.00R.

Canusa Coating Systems Limited: *See*—
Hansen, Ralph H., 4,465,571, Cl. 204-159.200.

Carberry, Victor V. Automatic boiler blowdown system including blowdown sequence control. 4,465,026, Cl. 122-382.000.

Carl Freudenberg, Firma: *See*—
Ebert, Heinrich; Noe, Manfred; Wind, Kurt; and Bitsch, Gunter, 4,464,850, Cl. 36-44.000.
Knoke, Jurgen; Buchwald, Holger; and Fehlhaber, Jurgen, 4,465,723, Cl. 428-90.000.

Carl Schenck AG.: *See*—
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Carl Still GmbH & Co. KG, Firma: *See*—
Stratmann, Josef; Urbye, Claus; and Brinkmann, Willi, 4,465,419, Cl. 414-328.000.

Carl-Zeiss-Stiftung: *See*—
Lang, Walter; Muchel, Franz; and Blaha, Erich, 4,465,348, Cl. 351-211.000.

Carlson, Roland W.: *See*—
Covic, John; and Carlson, Roland W., 4,466,112, Cl. 378-7.000.

Carlsson, Erik M., to SAB Nife AB. Process for the disassembling of scrap alkaline electric storage batteries. 4,464,830, Cl. 29-763.000.

Carpel, Emmett F. Surgical drape support. 4,465,066, Cl. 128-132.00D.
Carpenter, Larry D.: *See—*
Dotson, Ronald L.; Miles, Ronald C.; and Carpenter, Larry D., 4,465,568, Cl. 204-98.000.
Carr, Donald G.; Blonn, John M.; and Milawski, Leonard E., to Standard Oil Company, a corporation of Indiana. Process for producing flexible polyester foam. 4,465,792, Cl. 521-138.000.
Carr, Roderick R., to Bretton Patents Limited. Internal combustion engine. 4,465,035, Cl. 123-52.0MB.
Carrier Corporation: *See—*
Haas, Rudy E., 4,465,125, Cl. 165-76.000.
Wawro, Thaddeus J.; and Wright, Timothy A., 4,465,499, Cl. 55-481.000.
Carroll, Albert W.; and Pearce, Joseph L., to Otis Engineering Corporation. Releasable well tool stopping devices and systems. 4,465,132, Cl. 166-156.000.
Carter, Joseph F. Multiblade rotary lawnmower. 4,464,886, Cl. 56-13.800.
Carter, Malcolm N. A., to Lever Brothers Company. Alkyl phosphoric salt-hydrocarbon wax lather controlled detergent compositions. 4,465,613, Cl. 252-174.160.
Cartwright, David: *See—*
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, 4,465,508, Cl. 71-103.000.
Caserta, Anthony L.; and Lijoi, Bruno, to Grumman Aerospace Corporation. Electro-optical plug-in interconnection. 4,465,333, Cl. 350-96.200.
Casio Computer Co., Ltd.: *See—*
Ishida, Hideaki, 4,464,966, Cl. 84-1.030.
Cataldo, Roy S., to General Motors Corporation. Drive block for a continuous metal band drive belt. 4,465,469, Cl. 474-201.000.
Cattane, Giuseppe: *See—*
Osta, Francesco; and Cattane, Giuseppe, 4,465,015, Cl. 118-222.000.
Cazas, Francis: *See—*
Charpentier, Gerard J.; and Cazas, Francis, 4,465,541, Cl. 156-304.100.
Century Electric, Inc.: *See—*
Springer, H. Robert, 4,465,946, Cl. 310-42.000.
Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; and Bergamaschi, Mario, to Instituto de Angeli S.p.A. Imidazolylphenyl amidines. 4,465,841, Cl. 548-346.000.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Single article vending machine. 4,465,207, Cl. 221-241.000.
Chalfant, Gordon G., Jr., to United States of America, Energy. Conical O-ring seal. 4,465,201, Cl. 220-3.000.
Champion International Corporation: *See—*
Hood, Paul F.; and Locke, Frank W., 4,465,227, Cl. 229-36.000.
McCay, Johnny A.; Owens, Arthur H.; and Jackson, Fred N., 4,464,841, Cl. 33-174.00R.
Chan, Wan-Kit: *See—*
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Chanas, Maryse; Liautaud, Jacques; Pla, Jean; and Shanbrom, Edward, to Societe Anonyme dite: Institut Merieux. Prothrombin complex concentrates, preparation and application thereof. 4,465,623, Cl. 260-112.00B.
Chanasyk, Albert J.: *See—*
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Chandler Evans Inc.: *See—*
Morrison, Terry; and Meador, Jay D., 4,464,895, Cl. 60-39.141.
Chaney, John W.; and Royer, Roger G., to Cincinnati Milacron Industries, Inc. Modular circuit board guide. 4,466,049, Cl. 361-383.000.
Chang, Biau-Hung; and Goel, Anil B., to Ashland Oil, Inc. Manufacture of palladous carboxylates. 4,465,635, Cl. 260-414.000.
Chang, Franklin S., to Borg-Warner Corporation. Wettable coatings for inorganic substrates. 4,465,738, Cl. 428-426.000.
Chappell, William A.; Tweed, William J.; and Higgins, David T., to Rival Manufacturing Company. Percolator including pump-type dispenser. 4,464,983, Cl. 99-312.000.
Charbonnel, Alain: *See—*
Andro, Jean; and Charbonnel, Alain, 4,465,127, Cl. 165-81.000.
Charpentier, Gerard J.; and Cazas, Francis, to Etablissements Cazas; and Monoplast. Grouping single dose containers. 4,465,541, Cl. 156-304.100.
Chatelin, Jean-Pierre, to Valeo. Diaphragm springs. 4,465,267, Cl. 267-161.000.
Chattha, Mohinder S., to Ford Motor Company. Polyhydroxy oligomers for high solids coatings II. 4,465,815, Cl. 525-443.000.
Cheigh, Hong Sik; Kim, Chul Jin; and Kim, Dong Chul, to Korea Advanced Institute of Science and Technology. Apparatus for continuously extruding and drying/cooling cereal bran. 4,465,447, Cl. 425-72.00R.
Chemische Werke Huls Aktiengesellschaft: *See—*
Soyez, Werner, 4,465,596, Cl. 210-634.000.
Chen, Jung-Shou: *See—*
Huang, John J.; Chen, Jung-Shou; and Mezei, Louis M., 4,465,774, Cl. 436-15.000.
Cheng, David, to Xerox Corporation. Optical memory system for a reading/writing, verifying and tracking module. 4,466,087, Cl. 369-45.000.
Chernotsky, Alan; and Satz, Richard. Power limiting apparatus. 4,465,965, Cl. 323-239.000.
Cherry Electrical Products Corporation: *See—*
Cherry, Walter L., 4,466,046, Cl. 361-288.000.
Cherry, Walter L., to Cherry Electrical Products Corporation. Capacitive keyboard switch. 4,466,046, Cl. 361-288.000.
Chevron Research Company: *See—*
Aoyagi, Edward I., 4,465,675, Cl. 424-200.000.
Aoyagi, Edward I., 4,465,690, Cl. 424-308.000.
Kobzina, John W., 4,465,502, Cl. 71-76.000.
Miller, Stephen J., 4,465,788, Cl. 502-217.000.
Chew, Remedios K.: *See—*
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Chiangi, Daniel P.: *See—*
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Chiba, Hideo; Sasaki, Ryuzo; and Ueda, Masatsugu, to Snow Brand Milk Products Co., Ltd. Process for producing erythropoietin. 4,465,624, Cl. 260-112.00R.
Chiba, Tetsuya: *See—*
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Chicopee: *See—*
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Chida, Yoshinori: *See—*
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, 4,465,386, Cl. 400-121.000.
Chikamasa, Hiroshi: *See—*
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Chikaraishi, Takayo; and Itoh, Hiroshi, to Nissan Motor Company, Limited. Sliding type door assembly. 4,464,863, Cl. 49-213.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt: *See—*
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.
Chisholm-Ryder Company, Inc.: *See—*
Burton, Charles G., 4,464,888, Cl. 56-330.000.
Chiusoli, Gian P.; Pallini, Luciano; and Salerno, Giuseppe, to Istituto Donegani S.p.A. Process for preparing dienoic acids. 4,465,634, Cl. 260-413.000.
Chiyoda Chemical Engineering & Const. Co.: *See—*
Miyoshi, Hajime; Asanagi, Etsuo; and Terashima, Osamu, 4,465,518, Cl. 106-89.000.
Chlorine Engineers Corp. Ltd.: *See—*
Kasuya, Kazuki, 4,465,580, Cl. 204-290.00R.
Choudary, Uppala V.: *See—*
Love, Robert B.; and Choudary, Uppala V., 4,465,575, Cl. 204-192.00S.
Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. Process for preparing 1-6-and 2-substituted-1-carba-2-penem-3-carboxylic acids. 4,465,632, Cl. 260-245.20T.
Chronar Corporation: *See—*
Dalal, Vikram L.; and Akhtar, M., 4,465,706, Cl. 427-86.000.
Chrysler Corporation: *See—*
Werner, Lawrence E., 4,465,312, Cl. 293-132.000.
Cianci, James P., to Kendall Company, The. Collection device for body fluids. 4,465,484, Cl. 604-317.000.
Ciardella, Robert L.: *See—*
Jordan, Richard; Bull, William; Ciardella, Robert L.; Taggart, Robert; and Holt, Frederick R., 4,466,033, Cl. 360-99.000.
Ciba Geigy AG: *See—*
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, 4,465,763, Cl. 430-462.000.
Ciba-Geigy A.G.: *See—*
Leppard, David G.; and Rody, Jean, 4,465,757, Cl. 430-216.000.
Leppard, David G.; and Rody, Jean, 4,465,765, Cl. 430-512.000.
Ciba-Geigy Corporation: *See—*
Balliello, Paolo; Erzinger, Paul; and Tempel, Ernst, 4,465,491, Cl. 8-524.000.
Berger, Joseph; Pfeifer, Josef; and Reinehr, Dieter, 4,465,823, Cl. 528-345.000.
Fiaux, Andre ; and Nguyen, Dinh L., 4,465,722, Cl. 528-88.000.
Lukas, Bohumir; Wiesendanger, Walter; and Schmidt-Ruppin, Karl H., 4,465,666, Cl. 424-145.000.
Putzar, Roland, 4,465,492, Cl. 8-589.000.
Cidlowski, John A.; and Viceps-Madore, Dace, to Research Corporation. Monoclonal antibodies to vitamin B_6 and immunoassay method. 4,465,776, Cl. 436-504.000.
Cillario, Lorenzo, to Ferrero S.p.A. Package for food products particularly confectionery products. 4,465,190, Cl. 206-526.000.
Cincinnati Milacron Industries, Inc.: *See—*
Chaney, John W.; and Royer, Roger G., 4,466,049, Cl. 361-383.000.
Citizen Watch Co., Ltd.: *See—*
Murata, Mitsuhiro; and Tsunesumi, Tomoko, 4,465,380, Cl. 368-202.000.
Nanya, Takanori; Hashimoto, Eigo; and Nishimura, Katsuo, 4,465,341, Cl. 350-357.000.
Suganuma, Kunio, 4,465,340, Cl. 350-357.000.
Tsuzuki, Akira; Fujita, Hiro; and Morokawa, Shigeru, 4,465,999, Cl. 340-784.000.
Claque, Ghislain; and Meesters, Andre, to Commissariat a l'Energie Atomique. Seismometer. 4,466,084, Cl. 367-182.000.
Clarion Co., Ltd.: *See—*
Kizaki, Yoshio; and Ikawa, Mitsugu, 4,466,110, Cl. 375-108.000.
Tsuchiya, Yasunobu; and Tominaga, Kyuichiro, 4,466,085, Cl. 369-10.000.

Clarke, Donald A.: *See—*
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,465,374, Cl. 356-375.000.

Claussen, Ulf, to Siemens Aktiengesellschaft. Control unit with digital addressing memory for a DC-to-AC inverter. 4,466,070, Cl. 364-480.000.

Clayton, John P.: *See—*
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,465,689, Cl. 424-283.000.

Clemson University: *See—*
Collier, John A., 4,464,851, Cl. 37-55.000.

Cleusix, Willy, to Ebauches Electroniques S. A. Timepiece with modular alarm activating mechanism. 4,465,381, Cl. 368-250.000.

Clopay Corporation: *See—*
Cancio, Leopoldo V.; and Wu, Pai-Chuan, 4,465,729, Cl. 428-167.000.

Coal Industry (Patents) Limited: *See—*
Lewis, Winsor T.; and Browning, Eric J., 4,465,318, Cl. 299-1.000.

Coates, David, to ITT Industries, Inc. Dyes for smectic cells. 4,465,338, Cl. 350-350.00S.

Coburn Optical Industries, Inc.: *See—*
Ganther, Forrest E., 4,464,867, Cl. 51-209.00R.

Cockayne, David N.: *See—*
Fletcher, Augustus; Cockayne, David N.; and Moriarty, William L., 4,465,564, Cl. 204-44.000.

Coggon, Robert F., to Molins Limited. Composite drive or conveyor belt. 4,465,178, Cl. 198-688.000.

Cohen, Sheppard: *See—*
Barakitis, Nikolaos; and Cohen, Sheppard, 4,465,954, Cl. 315-104.000.

Cole, Graham C.: *See—*
Fry, Timothy S.; and Cole, Graham C., 4,465,292, Cl. 280-95.00R.

Coleman, Clint, to North Wind Power Company, Inc. Method of making a wooden wind turbine blade. 4,465,537, Cl. 156-154.000.

Coleman, G. A. John, to Universal Leaf Tobacco Co. Threshed tobacco lead separator. 4,465,194, Cl. 209-639.000.

Coleman, James H., to Sprague Electric Company. Adjustable monolithic ceramic capacitor. 4,466,045, Cl. 361-277.000.

Collagen Corporation: *See—*
Sabelman, Eric E.; Koogle, Timothy A.; and Kennedy, William, 4,465,478, Cl. 604-224.000.

Collard, David: *See—*
Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, 4,465,685, Cl. 424-258.000.

Collier, John A., to Clemson University. Underwater harvester for marine life. 4,464,851, Cl. 37-55.000.

Collins, David J.: *See—*
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, 4,465,508, Cl. 71-103.000.

Collins, Marshall S. Automated operatorless vehicles. 4,465,155, Cl. 180-169.000.

Colt Industries Operating Corp: *See—*
Dougherty, Michael, 4,465,640, Cl. 261-39.00B.

Combustion Engineering, Inc.: *See—*
Bridges, Charles D., 4,465,133, Cl. 166-208.000.
Musto, Richard L.; and Kai, Norichika, 4,464,999, Cl. 110-106.000.

Commissariat a l'Energie Atomique: *See—*
Claque, Ghislain; and Meesters, Andre, 4,466,084, Cl. 367-182.000.
Durand, Pierre, 4,465,998, Cl. 340-557.000.
Faure, Michel; and Poinssot, Jean-Louis, 4,465,325, Cl. 308-5.00R.

Communications Satellite Corporation: *See—*
Rhodes, Smith A., 4,466,108, Cl. 375-83.000.

Compagnie Industrielle Des Telecommunications: *See—*
Boujet, Jean-Pierre; Gaille, Gerard; and Jousselin, Charles, 4,465,989, Cl. 333-209.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Mauciere, Bernard; and Jamet, Daniel, 4,465,899, Cl. 174-52.00R.

Concast Service Union AG: *See—*
Vaterlaus, Arthur, 4,465,121, Cl. 164-484.000.

Coscina, Giuseppe, to Algat S.p.A. Toothed pulley of pressed sheet metal. 4,464,949, Cl. 74-449.000.

Conley, Richard W.; and Tremblay, Richard P., to Kerotest Manufacturing Corp. Plastic valve and improved actuator therefor. 4,465,260, Cl. 251-305.000.

Connell, G. A. Neville; and Mansuripur, Masud, to Xerox Corporation. Magneto-optic media and system optimization. 4,466,035, Cl. 360-114.000.

Conoco Inc.: *See—*
Shimoda, Elwyn, 4,465,000, Cl. 110-343.000.

Conradty, Claudio: *See—*
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.

Consolidated Foods Corporation: *See—*
Rosenquist, Joel C.; Thompson, Kenneth J.; and Foster, Wayne G., 4,464,913, Cl. 66-166.000.

Contraves AG: *See—*
Gahwiler, Hermann, 4,465,476, Cl. 604-191.000.
Ruegg, Andre, 4,465,473, Cl. 604-154.000.

Cooksey, Timothy S.: *See—*
Bell, Ted A.; Cooksey, Timothy S.; and Lehner, Daniel F., 4,465,720, Cl. 428-85.000.

Cooper, Geoffrey K.; and Harruff, Lewis G., to International Telephone and Telegraph Corporation. Process of hydroxylation of an aromatic carbonyl compound. 4,465,864, Cl. 568-433.000.

Cooper, Jeffrey L.: *See—*
DiMassimo, Donald V.; May, John B.; Johnson, Brian C.; and Cooper, Jeffrey L., 4,465,970, Cl. 324-116.000.

Cooper, Roydon B., to Pall Corporation. Apparatus for assembly and disassembly of a filter construction. 4,465,595, Cl. 210-238.000.

Copas, James I. Apparatus for using natural gas pressure for pumping a well. 4,465,435, Cl. 417-56.000.

Copp, Frederick C.; Caldwell, Albert G.; and Collard, David, to Burroughs Wellcome Co. Antiinflammatory pyrazole thioureas. 4,465,685, Cl. 424-258.000.

Coppe, Jacques; and Lascoux, Pierre, to Union Siderurgique du Nord et de l'Est de la France. Sealing device for a sheet metal treating machine. 4,465,086, Cl. 134-122.00R.

Corcelle, Francois, to Ateliers des Charmilles S.A. Method and apparatus for threading an electrode wire through an aperture in a workpiece. 4,465,915, Cl. 219-69.00W.

Corning Glass Works: *See—*
Duerr, Francis R.; and Pokallus, Leonard W., 4,465,454, Cl. 425-461.000.
Lentz, William P., 4,465,652, Cl. 264-177.00R.

Corpron, Gary P., to Rosemount Inc. Vortex flowmeter bluff body. 4,464,939, Cl. 73-861.240.

Cosar, Paul, to Fives-Cail Babcock. Production of cement clinker. 4,465,460, Cl. 432-106.000.

Cottell, Eric C. Lubricating composition containing polytetrafluoroethylene, and a process and system for manufacturing same. 4,465,607, Cl. 252-58.000.

Coulon, Helmut: *See—*
Geisler, Klaus; Heins, Hans-Hermann; Coulon, Helmut; and Kriwalski, Reiner, 4,465,655, Cl. 423-240.000.

Countryman, Roger S., Jr., to Motorola, Inc. Pad for accelerated memory test. 4,465,973, Cl. 324-158.00R.

Courbot, Pierre, to Societe Anonyme D.B.A. Mechanical control assembly. 4,464,951, Cl. 74-501.50R.

Couvillon, James B., to Texas Instruments Incorporated. Automatically centered pulsed FM receiver. 4,466,128, Cl. 455-208.000.

Cover, John H. Energy conversion system. 4,465,964, Cl. 322-2.00R.

Covic, John; and Carlson, Roland W., to Technicare Corporation. Variable detector aperture. 4,466,112, Cl. 378-7.000.

Covitch, Michael J., to ELTECH Systems Limited. Method for making polymer bonded electrodes. 4,465,533, Cl. 156-83.000.

Cox, Alan W., to Black & Decker Inc. Exercise apparatus with relatively rotatable arms. 4,465,276, Cl. 272-137.000.

Cox, John M.: *See—*
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, 4,465,508, Cl. 71-103.000.

CPC International Inc.: *See—*
Dean, Donald H.; and Ellis, Daniel M., 4,465,773, Cl. 435-253.000.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Treatment of brain injury due to gray matter edema with (indanyloxy) butanoic acids. 4,465,850, Cl. 560-053.000.

Craig, Laurence B.; and Farina, Alfred J., to Thermocatalytic Corporation. Absorption refrigeration cycle generator. 4,464,911, Cl. 62-476.000.

Crepeau, Richard E. Stairway-building system. 4,464,870, Cl. 52-188.000.

Cristobal, Carlos C.: *See—*
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,464,885, Cl. 52-693.000.

Crockett, Charles R., to Teccor Electronics, Inc. Circuit and method for controlling speed of an alternating current motor. 4,465,957, Cl. 318-345.00D.

Crofts, David; and Barnwell, David E., to Raychem Limited. Assembly for marking elongate objects. 4,465,717, Cl. 428-40.000.

Crook, Edward J., Jr.; and Baxter, Gary R., to Crosby Group, Inc., The. Socket for structural strand. 4,464,812, Cl. 24-122.600.

Crosby Commercial Refrigeration Systems, Inc.: *See—*
Stultz, James, 4,464,910, Cl. 62-320.000.

Crosby Group, Inc., The: *See—*
Crook, Edward J., Jr.; and Baxter, Gary R., 4,464,812, Cl. 24-122.600.

Crow, John H.: *See—*
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,465,614, Cl. 252-364.000.

Cser nee Kun, Judit: *See—*
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.

Cummings, Robert J., to United States of America, Air Force. Windblast leg protector assembly. 4,465,250, Cl. 244-122.0AG.

Cuscurida, Michael; and Klein, Howard P., to Texaco Inc. Procedure for the partial alkoxylation of polyoxyalkyleneamines. 4,465,858, Cl. 564-477.000.

Custom Home Spa, Inc.: *See—*
Lindberg, Donald, 4,465,428, Cl. 415-53.00R.

D/Punch Co.: *See—*
Liu, Peter D., 4,466,024, Cl. 360-60.000.

Dahl, Klaus: *See—*
Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, 4,465,557, Cl. 202-241.000.

Daicel Chemical Industried, Ltd.: *See*—
Harano, Yoshiyuki, 4,465,873, Cl. 568-868.000.
Daikin Kogyo Co., Ltd.: *See*—
Enjo, Naonori; Aomi, Hideki; and Noguchi, Masahiro, 4,465,610, Cl. 252-67.000.
Ishikawa, Nobuo; and Kitazume, Tomoya, 4,465,859, Cl. 564-502.000.
Daimler-Benz Aktiengesellschaft: *See*—
Martin, Klaus; Jurgens, Gunter; and Gaus, Hermann, 4,464,955, Cl. 74-867.000.
Dainippon Ink and Chemicals Inc.: *See*—
Tanaka, Hisami; Takenouchi, Osamu; and Kawara, Tatsuo, 4,465,753, Cl. 430-79.000.
Dainippon Pharmaceutical Co., Ltd.: *See*—
Sugisaki, Tetsuzo; and Morisue, Shinichi, 4,465,670, Cl. 424-177.000.
Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Sakamoto, Takashi, 4,465,375, Cl. 356-434.000.
Dalal, Vikram L.; and Akhtar, M., to Chronar Corporation. Bandgap control in amorphous semiconductors. 4,465,706, Cl. 427-86.000.
Dalby, James F., to Satellite Business Systems. Backup bearing and power transfer assembly for communication satellite. 4,465,951, Cl. 310-114.000.
Damen, Jozef T. W.; and Tan, Hong S., to Netherlands Postal & Telecommunications Services. Method and device for character segmentation. 4,466,121, Cl. 382-9.000.
Daniels, Edward P.; Dlugos, Daniel F.; and Manduley, Flavio M., to Pitney Bowes Inc. Mailing system peripheral interface with communications formatting memory. 4,466,079, Cl. 364-900.000.
Danielssen, Tore: *See*—
Bjune, Arne; Boe, Gunnar H.; and Danielssen, Tore, 4,465,569, Cl. 204-115.000.
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, to Sandoz Ltd. Asymmetrical diesters of ortho-phosphoric acid useful as corrosion inhibitors. 4,465,516, Cl. 106-14.120.
Dantowitz, Philip: *See*—
Hynek, Scott J.; Dantowitz, Philip; and Fuller, Henry H., 4,465,456, Cl. 431-62.000.
Dantzig, Jonathan A.; and Tyler, Derek E., to International Telephone and Telegraph Corporation. Process and apparatus having improved efficiency for producing a semi-solid slurry. 4,465,118, Cl. 164-452.000.
Darbo, Rolf E. Personal tablet dispenser. 4,465,191, Cl. 206-537.000.
Darlington, Roy K.; Henry, George, Jr.; and Lowell, Jack L., to NL Industries, Inc. Method of treating well servicing fluids. 4,465,598, Cl. 210-721.000.
Data General Corporation: *See*—
Houseman, David L.; Jones, Thomas M.; Richmond, Michael S.; and Pilat, John F., 4,466,057, Cl. 364-200.000.
Data Management, Inc.: *See*—
Hincks, Robert W.; and Hincks, Daniel A., 4,465,306, Cl. 282-29.00B.
Data Motion, Inc.: *See*—
Seitz, Alan F.; and Seitz, Karl G., 4,465,387, Cl. 400-175.000.
Davenport, Dennis L. Hydraulic exercise device. 4,465,274, Cl. 272-130.000.
David, Stephen T.; Brooke, Dana; and Gallian, Claude E., to Mead Johnson & Company. Sustained release tablet containing at least 95 percent theophylline. 4,465,660, Cl. 424-15.000.
Davis, Gershon J.: *See*—
Abramson, Alan J.; and Davis, Gershon J., 4,465,636, Cl. 260-429.00R.
Abramson, Alan J.; and Davis, Gershon J., 4,465,637, Cl. 260-429.00R.
Deacy, Edward F. Underwater viewing device. 4,465,468, Cl. 441-135.000.
Dealy, John M. Method of measuring shear stress. 4,464,928, Cl. 73-54.000.
Dean, Donald H.; and Ellis, Daniel M., to CPC International Inc. Amylase-negative, asporogenous mutant of *Bacillus subtilis* useful as a host in a host-vector system. 4,465,773, Cl. 435-253.000.
Dean, Leslie A. Musical education display apparatus. 4,464,971, Cl. 84-471.00R.
Dearnaley, Geoffrey; and Watkins, Robert E. J., to United Kingdom Atomic Energy Authority. Titanium and its alloys. 4,465,524, Cl. 148-31.500.
de Bruyne, Norman A., to Techne Corporation. Magnetic stirrer apparatus with guided, floating stirrer. 4,465,377, Cl. 366-273.000.
Debski, Wlodzimierz: *See*—
Platkiewicz, Leonard; Debski, Wlodzimierz; and Glowacki, Jerzy, 4,465,799, Cl. 523-457.000.
De Cenzo, Herbert A. Clam-shell coupling for joining beaded tubes. 4,465,330, Cl. 339-14.00R.
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., to Sperry Corporation. Method of cleaning threshed grain in a combine. 4,464,887, Cl. 56-16.500.
De Coene, Frans J. G. C., to Sperry Corporation. Oscillating mechanism for rotary cleaning device. 4,465,080, Cl. 130-27.0AA.
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., to Sperry Corporation. Fan for rotary cleaning mechanism in combine harvesters. 4,465,081, Cl. 130-27.0HF.
Deem, Brian C.; and Eslinger, Ralph G., to Bendix Corporation, The. Seal for closing a cavity. 4,465,286, Cl. 277-81.00P.
Deere & Company: *See*—
Meinert, Harry M.; and Sundberg, John D., 4,465,396, Cl. 403-395.000.
Rice, Dennis A., 4,464,852, Cl. 37-117.500.
Sharp, Richard F., 4,465,231, Cl. 239-5.000.
Degnan, Thomas F.; and Koenig, Leonard R., to Mobil Oil Corporation. Olefin processing. 4,465,884, Cl. 585-415.000.
Degre, Thomas; Lefevre, Francois; and Lefevre, Xavier. Apparatus for the detection and prevention of collision risks in deep sea and coastal navigation. 4,466,068, Cl. 364-461.000.
Dehne, Clarence A., to Jervis B. Webb Company. Conveyor trolley and track. 4,464,997, Cl. 104-172.00S.
Deicke, Axel, to Bayerische Motoren Werke Aktiengesellschaft. Electrical installation for triggering switching functions in motor vehicles. 4,465,942, Cl. 307-9.000.
Dekker, Martinus, to Ruti-te Strake, B.V. Jet weaving machine. 4,465,110, Cl. 139-370.200.
de Lange, Tinus, to Wavin B.V. Pipe coupler for insulated pipes. 4,465,307, Cl. 285-47.000.
Deligny, Jean, to Societe Anonyme D.B.A. Mechanical control by cable sliding axially in a flexible sheath. 4,464,950, Cl. 74-501.50R.
DelMar, Eric G., to FMC Corporation. Process to insecticide intermediate. 4,465,879, Cl. 570-190.000.
Del Soldato, Piero: *See*—
Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; and Bergamaschi, Mario, 4,465,841, Cl. 548-346.000.
Delta Manufacturing & Sales, Inc.: *See*—
Taldo, Terry J.; and Jackson, Kenneth R., 4,465,522, Cl. 134-10.000.
del Valle, Margarita E., to Laboratories Pharmedical SA. Process for the preparation of derivatives of 2-pyrrole acetic acid with anti-inflammatory activity. 4,465,843, Cl. 548-539.000.
DeMarinis, Robert M.; Hieble, Jacob P.; and Matthews, William D., to Smithkline Beckman Corporation. Pharmaceutical compositions and method of producing alpha$_2$ antagonism. 4,465,677, Cl. 424-244.000.
De Montmorency, David G. Guide case. 4,465,430, Cl. 415-205.000.
Denis, Jacques; Weill, Jerome; and Rojey, Alexandre, to Institut Francais du Petrole. Method of operating a heat pump or a thermal engine with a chloro-fluorinated hydrocarbon having an increased thermal stability. 4,465,609, Cl. 252-67.000.
Dennen, William M.; and Turney, Mary E., to Union Carbide Corporation. Process for treating furred animal pelts and/or fur. 4,465,802, Cl. 524-395.000.
Denz, Helmut; and Stumm, Hans-Peter, to Robert Bosch GmbH. Regulating device for an internal combustion engine. 4,465,043, Cl. 123-327.000.
Dermansky, Ira. Heated roller device. 4,465,450, Cl. 425-143.000.
DeSantis, Alfred J.; and Schibinger, Joseph S., to Burroughs Corporation. Concurrent processing elements for using dependency free code. 4,466,061, Cl. 364-200.000.
Desbois, Michel; and Reppelin, Michel, to Rhone-Poulenc Specialites Chimiques. Preparation of N-benzylimides. 4,465,842, Cl. 548-473.000.
Deutsch, Ralph, to Kawai Musical Instrument MFG. Co., Ltd. Autocorrelation tone generator for an electronic musical instrument. 4,464,965, Cl. 84-1.010.
Deutsche Babcock Aktiengesellschaft: *See*—
Richter, Robert; Wiehn, Helmut; and Lichtenberger, Horst, 4,465,021, Cl. 122-4.00D.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See*—
Mack, Robert; and Buschulte, Winfried, 4,464,907, Cl. 62-101.000.
De Wilde, Mark A., to United States of America, Army. Apparatus for converting a laboratory air furnace to a reduction furnace. 4,465,923, Cl. 219-390.000.
de Wit, Willem; and Vermijs, Winfried J. W., to Stamicarbon B.V. Melamine preparation. 4,465,832, Cl. 544-201.000.
Diamond, George B.; and Helmrich, Ralph H., to Diamond, George B. Decorative medallion and method and machine for manufacture. 4,465,740, Cl. 428-542.200.
Diamond International Corporation: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 4,465,225, Cl. 229-2.5EC.
Diamond Shamrock Chemicals Company: *See*—
Nguyen, Thinh; Fresnel, Jean-Marie; and Beer, Henri B., 4,465,561, Cl. 204-58.500.
Dickey, Leland C.; and Tayter, Maya, to InterNorth, Inc. Method for dewatering aggregate solid substrates by miscible liquid displacement. 4,464,844, Cl. 34-9.000.
Dickey, Leland C.; and Tayter, Maya, to InterNorth, Inc. Machine for dewatering aggregate solid substrates by miscible liquid displacement. 4,464,847, Cl. 34-71.000.
Dickhudt, Eugene A., to Medtronic, Inc. Biomedical lead with fibrosis-inducing anchoring strand. 4,465,079, Cl. 128-785.000.
Dickman, John E.; Turi, Raymond A.; and Topich, James A., to NCR Corporation. Epitaxial contact fabrication process. 4,464,824, Cl. 29-576.00E.
Didier Engineering GmbH: *See*—
Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, 4,465,557, Cl. 202-241.000.
Dieckmann, Klaus, to Springfix-Befestigungstechnik GmbH. Plastic ball socket extruded in one piece for a ball-and-socket joint. 4,465,393, Cl. 403-76.000.
Diefendorf, Russell J.; and Venner, Joe G., to Exxon Research & Engineering Co. Formation of optically anisotropic pitches. 4,465,586, Cl. 208-45.000.

Diffracto Ltd.: *See*—
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,465,374, Cl. 356-375.000.
DiGiacomo, Giulio: *See*—
Cammarano, Armando S.; and DiGiacomo, Giulio, 4,465,223, Cl. 228-198.000.
Dijkmans, Eise C.: *See*—
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,466,013, Cl. 357-51.000.
Dillman, Bruce A., to Bituma-Stor, Inc. Self-erecting portable paving mix silo. 4,465,420, Cl. 414-332.000.
Dillon, Patty M. Musical symbol educational game. 4,465,282, Cl. 273-247.000.
DiMassimo, Donald V.; May, John B.; Johnson, Brian C.; and Cooper, Jeffrey L., to General Electric Company. Method and apparatus for multiple rate metering of electrical energy. 4,465,970, Cl. 324-116.000.
Dimitriu, Dan. Maze board game. 4,465,280, Cl. 273-153.00R.
Dippel, Martin: *See*—
Peters, Richard W.; and Dippel, Martin, 4,466,119, Cl. 381-108.000.
Discovision Associates: *See*—
Lopez de Romana, Eduardo A., 4,465,977, Cl. 328-120.000.
Dittrich, Hans; Frey, Hartmut; and Penzhorn, Ralf-Dieter, to Kernforschungszentrum Karlsruhe GmbH. Cryosorption pump. 4,464,905, Cl. 62-55.500.
Dittrich, William A., to Dunk King Inc. Basketball goal structure. 4,465,277, Cl. 273-1.50A.
Diving Unlimited International, Inc.: *See*—
Long, Richard W.; and Stinton, Robert T., 4,464,795, Cl. 2-2.10R.
Dix, James S., to Phillips Petroleum Company. Polyester/carboxy-rubber molding composition containing potassium unsaturated-hydrocarbyl orthophosphate. 4,465,808, Cl. 525-170.000.
Dlugos, Daniel F.: *See*—
Daniels, Edward P.; Dlugos, Daniel F.; and Manduley, Flavio M., 4,466,079, Cl. 364-900.000.
Dobler, Peter: *See*—
Gliniorz, Lothar; Dobler, Peter; and Schoettle, Klaus, 4,465,247, Cl. 242-192.000.
Dobrescu, Lucia, to Smithkline-Rit. Detoxified *E. coli* neurotoxin, preparation thereof and immunological preparations containing it. 4,465,665, Cl. 424-92.000.
Dr. Ing. Geislinger & Co., Schwingungstechnik Gesellschaft mbH.: *See*—
Pfeifer, Peter, 4,464,822, Cl. 29-436.000.
Dodd, Joseph C. Means and method for recovering algae. 4,465,600, Cl. 210-777.000.
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., to Merck & Co., Inc. Thienamycin derivatives as anti-inflammatory agents. 4,465,687, Cl. 424-274.000.
Dolderer, Erich A., to Karl Hopt GmbH. Metering device for gaseous propellant. 4,465,052, Cl. 123-527.000.
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Domek, Susan M.: *See*—
Jatko, James J.; and Domek, Susan M., 4,465,703, Cl. 426-607.000.
Domen, Toshinori; and Masuda, Fumio, to Fuji Electric Co., Ltd. Coin selector. 4,465,173, Cl. 194-100.00A.
Donetti, Arturo: *See*—
Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; and Bergamaschi, Mario, 4,465,841, Cl. 548-346.000.
Donovan, Edmund D., Jr.; and Florian, Roy S., to Nickson Industries, Inc. Compact universal hanger for tailpipes and the like. 4,465,252, Cl. 248-60.000.
Doorne, van, Heir; by Martinus P. J. H.: *See*—
Van Doorne, Hubertus J., deceased, 4,464,954, Cl. 74-752.00E.
Dorman, Isidore, to Bell & Howell Company. Reader-filler machine for inserting film strips into microfiche jackets. 4,464,881, Cl. 53-520.000.
Dorner Mfg. Corp.: *See*—
Dorner, Wolfgang C., 4,465,177, Cl. 198-482.000.
Dorner, Wolfgang C., to Dorner Mfg. Corp. Elevator for a conveying system. 4,465,177, Cl. 198-482.000.
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Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, 4,465,936, Cl. 250-484.100.
Dotson, Ronald L.; Miles, Ronald C.; and Carpenter, Larry D., to Olin Corporation. Electrochemical production of $KNO_3/NaNO_3$ salt mixture. 4,465,568, Cl. 204-98.000.
Dougherty, Michael, to Colt Industries Operating Corp. Adjustable choke linkage means. 4,465,640, Cl. 261-39.00B.
Dover Corporation: *See*—
Wilder, Paul R., 4,465,209, Cl. 222-23.000.
Dow Chemical Company, The: *See*—
Kershner, Larry D., 4,465,837, Cl. 548-229.000.
Lock, Michele R.; and Frisch, Kurt C., Jr., 4,465,713, Cl. 427-385.500.
Pasztor, Andrew J., Jr., 4,465,601, Cl. 252-8.55R.
Dow Corning Corporation: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,465,805, Cl. 524-765.000.
Dow Corning Limited: *See*—
McVie, James, 4,465,712, Cl. 427-387.000.
Drageerwerk Aktiengesellschaft: *See*—
Albarda, Scato; and Eder, Alfred, 4,464,926, Cl. 73-27.00A.
Koch, Jochim; and Drews, Wolfgang, 4,465,067, Cl. 128-207.180.
Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Company. Polyamide resin from aralkylene diamine. 4,465,824, Cl. 528-347.000.
Drake, Charles A.: *See*—
Turk, Stanley D.; and Drake, Charles A., 4,465,822, Cl. 528-342.000.
Dreier, Ernst, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Thread gripper and cutting device for a sewing machine. 4,465,006, Cl. 112-292.000.
Dresser Industries, Inc.: *See*—
Houtz, Kenneth E., 4,465,169, Cl. 192-4.00A.
Dressler, Roger W., to Motorola, Inc. Dual range audio level control. 4,466,118, Cl. 381-102.000.
Drews, Wolfgang: *See*—
Koch, Jochim; and Drews, Wolfgang, 4,465,067, Cl. 128-207.180.
Dria, Dennis E.: *See*—
Bremer, Noel J.; and Dria, Dennis E., 4,465,846, Cl. 549-260.000.
Duclaux, Daniel; Boinet, Roger; Gerphagnon, Jean-Louis; and Baghe, Jean, to Aluminium Pechiney. Apparatus for the precise adjustment of the anode plane of an electrolysis cell used in the production of aluminum. 4,465,578, Cl. 204-245.000.
Duerr, Francis R.; and Pokallus, Leonard W., to Corning Glass Works. Extrusion die. 4,465,454, Cl. 425-461.000.
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., to Perkin-Elmer Corporation, The. Method of fabricating a pellicle cover for projection printing system. 4,465,759, Cl. 430-321.000.
Duncan, Robert J., to USM Corporation. Variable rate control logic for component insertion machine. 4,464,833, Cl. 29-718.000.
Dunk King Inc.: *See*—
Dittrich, William A., 4,465,277, Cl. 273-1.50A.
Dunlop Limited: *See*—
Slater, Christopher J., 4,465,105, Cl. 138-104.000.
Dunn, Victor S.: *See*—
Nelson, Jordan R.; Wissing, William K.; and Dunn, Victor S., 4,465,616, Cl. 252-511.000.
Whipple, Bruce A.; and Dunn, Victor S., 4,465,617, Cl. 252-511.000.
Dunwald, Willi: *See*—
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,839, Cl. 548-310.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,840, Cl. 548-310.000.
Du Pont de Nemours, E. I., and Company: *See*—
Graham, Boynton, 4,465,572, Cl. 204-159.160.
Hermolin, Joshua, 4,465,861, Cl. 568-342.000.
Merritt, Herbert C., 4,465,241, Cl. 242-1.000.
Welch, John T., 4,465,506, Cl. 71-92.000.
Wolf, Anthony D., 4,465,505, Cl. 71-92.000.
Durand, Pierre, to Commissariat a l'Energie Atomique. Burglar-proof barrier. 4,465,998, Cl. 340-557.000.
Durrfeld, Werner, to GTG Gesteins- und Tiefbau GmbH. Method and device for the backfilling of roadway supports in mine and tunnel construction with the aid of support hoses having a hardening filler. 4,465,405, Cl. 405-289.000.
Dworak, Wilhelm; Rustige, Hayno; and Wolff, Gunter, to Robert Bosch GmbH. Reversible gear machine. 4,465,444, Cl. 418-132.000.
Dynamit Nobel AG: *See*—
Bendler, Hellmut; and Scheiderer, Gerrit, 4,464,990, Cl. 102-204.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Englander, Fritz; and Steffen, Klaus-Dieter, 4,465,865, Cl. 568-436.000.
E. C. H. Will (GmbH & Co.): *See*—
Peters, Hartmut; and Yilmaz, Hulusi, 4,464,880, Cl. 53-493.000.
E. R. Squibb & Sons, Inc.: *See*—
Hill, John A., 4,465,486, Cl. 604-337.000.
Eastman, James E.; and Moore, Carl O., to A. E. Staley Manufacturing Company. Cold-water-soluble granular starch for gelled food compositions. 4,465,702, Cl. 426-578.000.
Eastman Kodak Company: *See*—
Joseph, Brian J.; and Williams, James O., 4,465,356, Cl. 355-3.0DD.
May, John W.; and Ng, Yee S., 4,465,749, Cl. 430-54.000.
Pond, David M.; and Glenn, Thomas J., 4,465,854, Cl. 560-265.000.
Rumsey, Stephen C., 4,465,361, Cl. 355-14.0SH.
Eaton Corporation: *See*—
Heider, Erich E., 4,465,917, Cl. 219-98.000.
Eaton, James W., to Masonite Corporation. Building panel. 4,464,872, Cl. 52-276.000.
Ebauches Electroniques S. A.: *See*—
Cleusix, Willy, 4,465,381, Cl. 368-250.000.
Eberling, Richard; and Voll, Werner, to Siemens Aktiengesellschaft. Magnetic spreading device for a sheet metal stack of individual magnetizable laminations with a central hole. 4,465,415, Cl. 414-122.000.
Ebert, Heinrich; Noe, Manfred; Wind, Kurt; and Bitsch, Gunter, to Carl Freudenberg, Firma. Shoe insert. 4,464,850, Cl. 36-44.000.
Ebert, Michael: *See*—
Reick, Franklin G., 4,465,058, Cl. 126-429.000.
ECD-ANR Energy Conversion Company: *See*—
Reyes, Jaime M., 4,465,894, Cl. 136-225.000.
Verner, Dalton R.; and Heath, Donald L., 4,465,895, Cl. 136-225.000.
Eckert, Konrad; Straubel, Max; and Vogel, Wilhelm, to Robert Bosch GmbH. Fuel injection apparatus for internal combustion engines, in particular diesel engines. 4,465,049, Cl. 123-446.000.

Edamoto, Toshio: *See*—
Shimazu, Teruo; Edamoto, Toshio; and Miyazawa, Azuma, 4,464,944, Cl. 74-10.330.
Eder, Alfred: *See*—
Albarda, Scato; and Eder, Alfred, 4,464,926, Cl. 73-27.00A.
Edgar, Roger F., to Infrared Engineering Limited. Calibration standard for infrared absorption gauge. 4,465,929, Cl. 250-252.100.
Edwards, Charles L., to Shell Oil Company. Magnesium catalyzed alkoxylation of alkanols in the presence of alkoxylate reaction activators. 4,465,877, Cl. 568-618.000.
Edwards, David B. Attachment device for mounting face-protective shields on headgear. 4,464,800, Cl. 2-452.000.
Effron, Edward; Giese, Alexis A.; and Melin, Gerald A., to Exxon Research & Engineering Co. Use of hydrogen sulfide to reduce the viscosity of bottoms streams produced in hydroconversion processes. 4,465,584, Cl. 208-10.000.
Eggenstein, Friedrich: *See*—
Piester, Karl H.; Eggenstein, Friedrich; and Terhorst, Gunter, 4,465,407, Cl. 405-299.000.
Eguchi, Yasukata; Hanyu, Susumu; and Nagasaka, Chuji, to Janome Sewing Machine Industry Co., Ltd. Apparatus for dyeing sewing machine upper threads. 4,465,005, Cl. 112-270.000.
Eguchi, Yasukata, to Janome Sewing Machine Co., Ltd. Stitching formation by a suturing instrument. 4,465,070, Cl. 128-334.00R.
Eichelberger, Fred S.: *See*—
Russo, Richard, 4,465,979, Cl. 330-66.000.
Eilingsfeld, Heinz: *See*—
Neumann, Peter; Etzbach, Karl-Heinz; Eilingsfeld, Heinz; and Hoffmann, Gerhard, 4,465,857, Cl. 564-251.000.
Eisenkolb, Klaus: *See*—
Baumann, Erich; Eisenkolb, Klaus; and Morawietz, Werner, 4,465,417, Cl. 414-235.000.
Elata, Chaim, to Solmat Systems, Ltd. Method and means for removing heat from a heat storage layer of water. 4,465,056, Cl. 126-415.000.
Electric Power Research Institute, Inc.: *See*—
Hooper, George D., 4,465,106, Cl. 138-142.000.
Elevator GmbH: *See*—
Kontturi, Risto; Kahkipuro, Matti; and Saransaari, Pertti, 4,466,053, Cl. 363-129.000.
Eli Lilly and Company: *See*—
Harris, Dale C.; and Hargrove, William W., 4,465,471, Cl. 604-56.000.
Ellis, Daniel M.: *See*—
Dean, Donald H.; and Ellis, Daniel M., 4,465,773, Cl. 435-253.000.
Elring Dichtungswerke GmbH: *See*—
Bindel, Rudolf; and Kullen, Wilhelm, 4,465,287, Cl. 277-235.00B.
ELTECH Systems Limited: *See*—
Covitch, Michael J., 4,465,533, Cl. 156-83.000.
Emtage, Peter R.: *See*—
Loh, Koon W.; and Emtage, Peter R., 4,465,986, Cl. 333-148.000.
Endo, Nobuyoshi: *See*—
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, 4,465,761, Cl. 430-341.000.
Energy-Adaptive Grinding, Inc.: *See*—
Smith, Roderick L.; and Kolell, Norbert C., 4,464,866, Cl. 51-165.870.
Energy Conversion Devices, Inc.: *See*—
Izu, Masatsugu; and Cannella, Vincent D., 4,464,823, Cl. 29-572.000.
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, 4,465,704, Cl. 430-292.000.
Englander, Fritz; and Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Method of preparing terephthalic aldehyde and isophthalic aldehyde. 4,465,865, Cl. 568-436.000.
English Electric Valve Company Limited: *See*—
Scholz, Hans; and Bailey, Paul C., 4,465,927, Cl. 250-213.0VT.
Enjo, Naonori; Aomi, Hideki; and Noguchi, Masahiro, to Daikin Kogyo Co., Ltd. Working fluids for rankine cycle. 4,465,610, Cl. 252-67.000.
Enomoto, Shigeo: *See*—
Hirobe, Hitoshi; Enomoto, Shigeo; Minakuchi, Tadashi; and Urata, Shinji, 4,465,352, Cl. 354-406.000.
Environmental Technology (U.S.), Inc.: *See*—
Wemhoff, Mark F., 4,465,593, Cl. 210-96.100.
Envirotech Corporation: *See*—
McNab, William S.; and Phifer, Jerry A., 4,465,293, Cl. 280-474.000.
Epis, Olivo, to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A. Means for controlling knife oscillations and hook movements in a loom dobby. 4,465,107, Cl. 139-66.00R.
Epis, Olivo, to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A. Play taking-up means in loom dobby control units. 4,465,108, Cl. 139-66.00A.
Epis, Olivo, to Fimtessile Fabrica Italiana Macchinario Tessile S.p.A. Loom dobby control units. 4,465,109, Cl. 139-68.000.
Eppes, Thomas A., to United States of America, Army. Concentric core optical fiber coupler. 4,465,335, Cl. 350-96.210.
Epson Corporation: *See*—
Yajima, Torao, 4,465,959, Cl. 318-696.000.
Erb, Richard I. Bicycle rack. 4,465,196, Cl. 211-19.000.
Erco Industries Limited: *See*—
Fredette, Maurice C. J., 4,465,658, Cl. 423-478.000.
Ernst Leitz Wetzlar GmbH: *See*—
Schmidt, Horst, 4,465,366, Cl. 356-1.000.
Ertl, Herbert, to Interparte Aktiengesellschaft. Gear mechanism for motor vehicles. 4,464,945, Cl. 74-15.600.
Erzinger, Paul: *See*—
Balliello, Paolo; Erzinger, Paul; and Tempel, Ernst, 4,465,491, Cl. 8-524.000.
Escher Wyss Aktiengesellschaft: *See*—
Surat, Miroslav, 4,464,921, Cl. 72-243.000.
Eslinger, Ralph G.: *See*—
Deem, Brian C.; and Eslinger, Ralph G., 4,465,286, Cl. 277-81.00P.
Espada Anstalt, Universal Marketing: *See*—
Tromeur, Jean-Francois, 4,465,916, Cl. 219-78.010.
ESPE Fabrik pharmazeutischer Praeparate GmbH: *See*—
Herold, Wolf-Dietrich; Gasser, Oswald; and Pieper, Gunter, 4,464,941, Cl. 73-864.130.
Estberg, Magnus F. O., to KenoGard AB. Process for treating wood. 4,464,848, Cl. 34-92.000.
Etablissements Cazas: *See*—
Charpentier, Gerard J.; and Cazas, Francis, 4,465,541, Cl. 156-304.100.
Etzbach, Karl-Heinz: *See*—
Neumann, Peter; Etzbach, Karl-Heinz; Eilingsfeld, Heinz; and Hoffmann, Gerhard, 4,465,857, Cl. 564-251.000.
Eue, Ludwig: *See*—
Forster, Heinz; Mues, Volker; Bassner, Bernd; Hagemann, Hermann; Eue, Ludwig; and Schmidt, Robert, 4,465,504, Cl. 71-88.000.
Evans Adlard & Company Limited: *See*—
Harris, Frank J. T., 4,465,748, Cl. 429-247.000.
Evans, Howard E.; and Minor, James C., to International Business Machines Corporation. Method of making elastomer-coated hot roll. 4,465,646, Cl. 264-24.000.
Evans, William P., to Union Carbide Corporation. Alkali metal or alkaline earth metal compound additive for manganese dioxide-containing nonaqueous cells. 4,465,747, Cl. 429-194.000.
Ewing, James H.; and Ramberg, Fred G., to MKS Instruments, Inc. Thermal mass flowmetering. 4,464,932, Cl. 73-204.000.
Excelermatic Inc.: *See*—
Kraus, Charles E., 4,464,946, Cl. 74-200.000.
Exelby, Nicholas. Educational device for teaching children to read. 4,465,467, Cl. 434-172.000.
Exxon Research & Engineering Co.: *See*—
Diefendorf, Russell J.; and Venner, Joe G., 4,465,586, Cl. 208-45.000.
Effron, Edward; Giese, Alexis A.; and Melin, Gerald A., 4,465,584, Cl. 208-10.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., 4,465,801, Cl. 524-389.000.
Pine, Lloyd A., 4,465,780, Cl. 502-68.000.
Fairchild Camera and Instrument Corp.: *See*—
Sloane, Edwin A., 4,465,995, Cl. 340-347.0CC.
Fankhauser, Peter, to Firmenich SA. Spiranic compound for use as a perfume or flavor-modifying ingredient. 4,465,618, Cl. 252-522.00R.
Fanucci, Ronald E.; and Yuen, Maria J., to AT&T Technologies, Inc. Technique for fabricating single mode lightguide soot-forms. 4,465,708, Cl. 427-163.000.
Farber, Heinrich: *See*—
Krobel, Heinz; Farber, Heinrich; and Muller, Jurgen, 4,465,364, Cl. 355-40.000.
Farina, Alfred J.: *See*—
Craig, Laurence B.; and Farina, Alfred J., 4,464,911, Cl. 62-476.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, 4,465,671, Cl. 424-180.000.
Faschingbauer, Gerald L., to UOP Inc. Process for use of a noble metal and rare earth metal catalyst. 4,465,654, Cl. 423-213.500.
Faure, Michel; and Poinssot, Jean-Louis, to Commissariat a l'Energie Atomique. Device for handling a load. 4,465,325, Cl. 308-5.00R.
Feenstra, Robijn; and Kamp, Anthony W., to Shell Oil Company. Method and means for controlling the course of a bore hole. 4,465,147, Cl. 175-73.000.
Fehlhaber, Jurgen: *See*—
Knoke, Jurgen; Buchwald, Holger; and Fehlhaber, Jurgen, 4,465,723, Cl. 428-90.000.
Feigelson, Robert S.; and Borshchevsky, Alexander, to Leland Stanford Junior University, The Board of Trustees of the. Method of growing single crystal cadmium telluride. 4,465,545, Cl. 156-616.00R.
Feiten, Erwin E.; and Lehmann, Clemens M., to Karl Rabofsky GmbH. Apparatus for guiding the folding blade and for actuating the tilting arm of the blade bar of a pleating machine. 4,465,214, Cl. 223-30.000.
Feiten, Erwin E.: *See*—
Lehmann, Clemens M.; Feiten, Erwin E.; and zur Nieden, Erich E., 4,465,213, Cl. 223-30.000.
Ferguson, Robert W., to Oyster Tent Company. Tent. 4,465,087, Cl. 135-101.000.
Ferrero S.p.A.: *See*—
Cillario, Lorenzo, 4,465,190, Cl. 206-526.000.
Fey, Rainer, to Fichtel & Sachs AG. Central locking system. 4,466,044, Cl. 361-152.000.
Fiaux, Andre ; and Nguyen, Dinh L., to Ciba-Geigy Corporation. Process for the preparation of epoxide resins by the advancement method. 4,465,722, Cl. 528-88.000.
Fichtel & Sachs AG: *See*—
Fey, Rainer, 4,466,044, Cl. 361-152.000.
Field, Florence F. Device for carrying a scented element for affixing to the body, articles, of clothing or packages. 4,465,232, Cl. 239-36.000.
Fieldhouse, John W.; Koch, Russell W.; and Oziomek, James, to Firestone Tire & Rubber Company, The. Adhering cured polymers or

prepolymers to high natural rubber content elastomer. 4,465,535, Cl. 156-97.000.
Fike Metal Products Corporation: *See*—
McIntire, Ronald A.; and Batz, Gary C., 4,464,936, Cl. 73-705.000.
Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A.: *See*—
Epis, Olivo, 4,465,107, Cl. 139-66.00R.
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Fimtessile Fabrica Italiana Macchinario Tessile S.p.A.: *See*—
Epis, Olivo, 4,465,109, Cl. 139-68.000.
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Buschhaus, Hans-Ulrich; Findeisen, Kurt; and Bock, Manfred, 4,465,836, Cl. 548-110.000.
Firestone Tire & Rubber Company, The: *See*—
Fieldhouse, John W.; Koch, Russell W.; and Oziomek, James, 4,465,535, Cl. 156-97.000.
Graves, Daniel F., 4,465,829, Cl. 524-432.000.
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Fankhauser, Peter, 4,465,618, Cl. 252-522.00R.
Firth, Bruce E.; and Rosen, Terry J., to UOP Inc. Preparation of 2-t-butyl-4-alkoxy- and 4-hydroxyphenols. 4,465,871, Cl. 568-783.000.
Fischer, Rudolph; and Stab, Rudolf, to Albert-Frankenthal AG. Apparatus for pasting a web at right angles to its direction of motion. 4,465,544, Cl. 156-548.000.
Fish, Michael J.; and Gill, Michael J., to Brookes & Gatehouse Limited. Suspension systems for flux gate compasses. 4,464,842, Cl. 33-344.000.
Fitch, John L., to Mobil Oil Corporation. Tubular drill string member with contoured circumferential surface. 4,465,146, Cl. 175-61.000.
Fitzgerald, William V., to RCA Corporation. Regulated power supply incorporating a power transformer having a tightly coupled supplemental power transfer winding. 4,466,051, Cl. 363-21.000.
Fitzpatrick, Brian J.; and McGee, Thomas F., III, to North American Philips Corporation. Method of growing polycrystalline and monocrystalline bodies of volatile 2,6 and 3,5 compounds in graphite crucibles by self-sealing and self-releasing techniques. 4,465,546, Cl. 156-616.00A.
Fives-Cail Babcock: *See*—
Cosar, Paul, 4,465,460, Cl. 432-106.000.
Flaig, Hans: *See*—
Maurer, Roland; Wolber, Robert; Obergfell, Walter; and Flaig, Hans, 4,465,378, Cl. 368-88.000.
Flanagan, Thomas L., to Standard-Knapp, Inc. Paperboard tray corner construction. 4,465,226, Cl. 229-32.000.
Flanigan, Marie C.: *See*—
Bobbio, Stephen M.; Flanigan, Marie C.; and Thrun, Kenneth M., 4,465,552, Cl. 156-643.000.
Fletcher, Augustus; Cockayne, David N.; and Moriarty, William L., to American Chemical & Refining Company, Inc. Gold plating bath containing tartrate and carbonate salts. 4,465,564, Cl. 204-44.000.
Florian, Roy S.: *See*—
Donovan, Edmund D., Jr.; and Florian, Roy S., 4,465,252, Cl. 248-60.000.
FMC Corporation: *See*—
Baum, Burton M.; and Stange, Hugo, 4,465,834, Cl. 546-127.000.
DelMar, Eric G., 4,465,879, Cl. 570-190.000.
Petro, John S., IV, 4,465,714, Cl. 427-424.000.
Rodier, Waldo E., Jr., 4,464,973, Cl. 89-40.00B.
Fogarty, A. Edward; and Fogarty, Bonnie R. Plush toy. 4,464,861, Cl. 446-370.000.
Fogarty, Bonnie R.: *See*—
Fogarty, A. Edward; and Fogarty, Bonnie R., 4,464,861, Cl. 446-370.000.
Fontana, Peter, to State of Oregon. Multi-detector intensity interferometer and method for processing incoherent radiation signals. 4,466,067, Cl. 364-460.000.
Forbes, Edward K., deceased; and Forbes, Ivah T., executor. Internal combustion engine. 4,465,036, Cl. 123-57.00R.
Forbes, Ivah T., executor: *See*—
Forbes, Edward K., deceased; and Forbes, Ivah T., executor, 4,465,036, Cl. 123-57.00R.
Forbes, James A. Apparatus for optically scanning an object. 4,465,937, Cl. 250-560.000.
Ford Aerospace & Communications Corporation: *See*—
Zanio, Kenneth R., 4,465,565, Cl. 204-56.00R.
Ford Motor Company: *See*—
Chattha, Mohinder S., 4,465,815, Cl. 525-443.000.
Stojek, Dieter, 4,465,644, Cl. 261-44.00B.
Formigraphic Engine Corporation: *See*—
Swainson, Wyn K.; and Kramer, Stephen D., 4,466,080, Cl. 365-106.000.
Forster, Franz, to Linde Aktiengesellschaft. Drive flange swash plate machines. 4,464,979, Cl. 91-499.000.
Forster, Heinz; Mues, Volker; Bassner, Bernd; Hagemann, Hermann; Eue, Ludwig; and Schmidt, Robert, to Bayer Aktiengesellschaft. Herbicidally active novel N-(2,2,2-trifluoroethyl)-N-alkyl-azolyloxyacetic acid amides and intermediates therefor. 4,465,504, Cl. 71-88.000.
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, to Ciba Geigy AG. Process for the production of photographic color images by the silver dye bleach process. 4,465,763, Cl. 430-462.000.
Fortman, Ronald F.: *See*—
Grew, Gary T.; and Fortman, Ronald F., 4,464,916, Cl. 72-17.000.
Foster-Miller Inc.: *See*—
Hynek, Scott J.; Dantowitz, Philip; and Fuller, Henry H., 4,465,456, Cl. 431-62.000.
Foster, Wayne G.: *See*—
Rosenquist, Joel C.; Thompson, Kenneth J.; and Foster, Wayne G., 4,464,913, Cl. 66-166.000.
Foster Wheeler Energy Corporation: *See*—
Zoschak, Robert J.; and Biswas, Bimal K., 4,466,082, Cl. 366-101.000.
Foundation: The Research Institute of Electric and Magnetic Alloys, The: *See*—
Watanabe, Kiyoshi, 4,465,526, Cl. 148-101.000.
Fowler, Gerald L., to General Equipment & Mfg. Co., Inc. Double-pole double-throw proximity switch. 4,465,992, Cl. 335-205.000.
Fowler, Ricky C. Control circuit for switching dual function electrical appliances. 4,465,956, Cl. 318-268.000.
Franklin, James G.: *See*—
Pagliaro, Fulvio A.; Franklin, James G.; and Gasser, Rupert J., 4,465,699, Cl. 426-428.000.
Franks, Nelson, to Owens-Illinois, Inc. Adjustable bottle conveying apparatus. 4,464,884, Cl. 53-557.000.
Franz Plasser Bahnbaumaschinen Industriegesellschaft mbH: *See*—
Theurer, Josef; Brunninger, Manfred; and Oellerer, Friedrich, 4,465,414, Cl. 414-21.000.
Fraser, David B. Optically stabilized telescope. 4,465,346, Cl. 350-500.000.
Fredette, Maurice C. J., to Erco Industries Limited. Chlorine dioxide process. 4,465,658, Cl. 423-478.000.
French, Roger F. Hot water heating system. 4,465,059, Cl. 126-433.000.
Fresnel, Jean-Marie: *See*—
Nguyen, Thinh; Fresnel, Jean-Marie; and Beer, Henri B., 4,465,561, Cl. 204-58.500.
Frey, Hartmut: *See*—
Dittrich, Hans; Frey, Hartmut; and Penzhorn, Ralf-Dieter, 4,464,905, Cl. 62-55.500.
Frick Company: *See*—
Nemit, Paul, Jr.; and Pillis, Joseph W., 4,465,446, Cl. 418-201.000.
Friedrich Wilh. Schwing GmbH: *See*—
Schwing, Friedrich, 4,465,441, Cl. 417-517.000.
Frieze, Allan S.: *See*—
Bowman, Peter; and Frieze, Allan S., 4,464,835, Cl. 30-84.000.
Frisch, Kurt C., Jr.: *See*—
Lock, Michele R.; and Frisch, Kurt C., Jr., 4,465,713, Cl. 427-385.500.
Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See*—
Dreier, Ernst, 4,465,006, Cl. 112-292.000.
Fritzen, Edward L.: *See*—
Thomas, Richard C.; and Fritzen, Edward L., 4,465,848, Cl. 549-361.000.
Frohberger, Paul-Ernst: *See*—
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,465,678, Cl. 424-244.000.
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, 4,465,680, Cl. 424-245.000.
Froze, Raisa M.: *See*—
Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M., 4,464,845, Cl. 34-18.000.
Fry, Timothy S.; and Cole, Graham C., to GKN Group Services Limited. Steering of vehicles. 4,465,292, Cl. 280-95.00R.
Fryberg, Mario: *See*—
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, 4,465,763, Cl. 430-462.000.
Fuji Electric Co., Ltd.: *See*—
Domen, Toshinori; and Masuda, Fumio, 4,465,173, Cl. 194-100.00A.
Iwanami, Masao, 4,465,210, Cl. 222-148.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Kubota, Masaharu, 4,464,896, Cl. 60-290.000.
Morozumi, Takuro; Nakamura, Mitsuo; Ohgami, Masaaki; and Kataoka, Ryuji, 4,465,048, Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See*—
Ishikawa, Takatoshi; Nakamura, Takashi; and Nakamura, Kotaro, 4,465,762, Cl. 430-376.000.
Kawamura, Kouichi; and Sato, Hideo, 4,465,751, Cl. 430-64.000.
Kiritani, Masataka; and Mikami, Takeshi, 4,465,755, Cl. 430-111.000.
Mikami, Takeshi; and Hosoi, Noriyuki, 4,465,756, Cl. 430-138.000.
Miyatuka, Hajime; Kasuga, Akira; Matsufuji, Akihiro; and Sugisaki, Tsutomu, 4,465,737, Cl. 428-339.000.
Nakamura, Sukenori; and Igarashi, Akira, 4,466,007, Cl. 346-200.000.
Tanaka, Yasuhinori; and Chikamasa, Hiroshi, 4,465,707, Cl. 427-128.000.
Fuji Xerox Co., Ltd.: *See*—
Arai, Yoshio; and Kataoka, Hiroyuki, 4,466,123, Cl. 382-55.000.
Asanuma, Tetsu; and Miura, Tsutomu, 4,464,985, Cl. 100-47.000.
Saitoh, Toshio; Wakatsuki, Susumu; Kojima, Heiichiro; and Asaka, Noboru, 4,465,271, Cl. 271-227.000.
Fujii, Noriki: *See*—
Hata, Akio; Kake, Hiroshi; and Fujii, Noriki, 4,465,615, Cl. 252-511.000.
Fujimoto, Isao, to Sanyo Electric Co., Ltd. Tuner apparatus. 4,466,126, Cl. 455-169.000.
Fujioka, Kazuyoshi, to Nissan Motor Company, Limited. Automatic transmission selector valve. 4,465,167, Cl. 192-3.570.
Fujita, Hiro: *See*—
Tsuzuki, Akira; Fujita, Hiro; and Morokawa, Shigeru, 4,465,999, Cl. 340-784.000.

Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, to Hitachi, Ltd. Ceramic wiring boards. 4,465,727, Cl. 428-138.000.
Fujitaki, Roy K.: *See*—
Kinard, Winifred; and Fujitaki, Roy K., 4,465,187, Cl. 206-425.000.
Fujitsu Fanuc Limited: *See*—
Inaba, Hajimu; Nakashima, Seiichiro; Inagaki, Shigemi; and Ito, Susumu, 4,465,424, Cl. 414-589.000.
Obara, Haruki, 4,465,914, Cl. 219-69.00W.
Oyama, Shigeaki; Nakamura, Kosei; Hayashi, Yoshiyuki; and Koyoshida, Shigeru, 4,465,948, Cl. 310-62.000.
Fujitsu Limited: *See*—
Fukano, Tetsu, 4,465,532, Cl. 156-643.000.
Fukushima, Toshitaka, 4,466,012, Cl. 357-49.000.
Goto, Hiroshi, 4,465,528, Cl. 148-187.000.
Kawano, Hisao; Naito, Shun-ichi; and Shibata, Yuji, 4,466,095, Cl. 370-63.000.
Fukano, Tetsu, to Fujitsu Limited. Method for forming an isolation region for electrically isolating elements. 4,465,532, Cl. 156-643.000.
Fukase, Hiroshi: *See*—
Hori, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,465,844, Cl. 548-546.000.
Fukawa, Isaburo: *See*—
Moriguchi, Kisoo; and Fukawa, Isaburo, 4,465,812, Cl. 525-333.800.
Fukuda, Kazushige: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,465,647, Cl. 264-29.600.
Fukui, Yutaka: *See*—
Kagohara, Hiromi; Iizuka, Nobuyuki; Fukui, Yutaka; and Sakamoto, Masahiko, 4,465,530, Cl. 148-410.000.
Fukumoto, Takaaki: *See*—
Arima, Hideaki; Nishimura, Tadashi; Yoneda, Masahiro; Fukumoto, Takaaki; and Hirata, Yoshihiro, 4,465,529, Cl. 148-188.000.
Fukushima, Toshitaka, to Fujitsu Limited. Semiconductor device with deep oxide isolation. 4,466,012, Cl. 357-49.000.
Fulgoni, Jean-Claude. Protective devices for permanently waving solely in the vicinity of the root of a hair. 4,465,084, Cl. 132-39.000.
Fuller, Henry H.: *See*—
Hynek, Scott J.; Dantowitz, Philip; and Fuller, Henry H., 4,465,456, Cl. 431-62.000.
Furihata, Toshikazu, to Mitsui Petrochemical Industries, Ltd. Adhesive composition. 4,465,542, Cl. 156-330.000.
Furrer, Robert: *See*—
Bajka, Imre; and Furrer, Robert, 4,465,014, Cl. 118-114.000.
Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Fastener feeding method and mechanism. 4,465,217, Cl. 227-67.000.
Furutsu, Akira, to Japan Bano'k Co., Ltd. Apparatus for attaching tag pins. 4,465,218, Cl. 227-67.000.
Gahwiler, Hermann, to Contraves AG. Injection syringe for injecting two liquids. 4,465,476, Cl. 604-191.000.
Gaille, Gerard: *See*—
Boujet, Jean-Pierre; Gaille, Gerard; and Jousselin, Charles, 4,465,989, Cl. 333-209.000.
Gaiser, Robert F.: *See*—
Myers, Lawrence R.; Gaiser, Robert F.; Lohraff, Larry G.; and Bach, Lloyd G., 4,464,899, Cl. 60-547.100.
Gaiser, Willie: *See*—
Leins, Eberhard; Walter, Manfred; and Gaiser, Willie, 4,464,912, Cl. 66-77.000.
Gakko Jojin Kinki Daigaku (Educational Foundation Kinki of University): *See*—
Tanaka, Yasuo; and Takechi, Masayuki, 4,465,673, Cl. 424-180.000.
Galda, Michael P.: *See*—
Soroka, Walter G.; and Galda, Michael P., 4,465,188, Cl. 206-522.000.
Galiasso, Roberto E.: *See*—
Larrauri, Jose M.; Arias, Beatriz C.; and Galiasso, Roberto E., 4,465,784, Cl. 502-242.000.
Gallian, Claude E.: *See*—
David, Stephen T.; Brooke, Dana; and Gallian, Claude E., 4,465,660, Cl. 424-15.000.
Galow, Manfred: *See*—
Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, 4,465,557, Cl. 202-241.000.
Gamble, James E. Heated can rolls of high thermal efficiency. 4,464,849, Cl. 34-110.000.
Gang-Nail Systems, Inc.: *See*—
Palacio, Joaquin J.; and Cristobal, Carlos C., 4,464,885, Cl. 52-693.000.
Ganther, Forrest E., to Coburn Optical Industries, Inc. Radially adjustable lap. 4,464,867, Cl. 51-209.00R.
Ganzhara, Vladimir I.: *See*—
Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M., 4,464,845, Cl. 34-18.000.
Garg, Diwakar; and Miller, Robert N., to Air Products and Chemicals, Inc. Process for the hydroliquefaction of heavy hydrocarbon oils and residua. 4,465,587, Cl. 208-87.000.
Garrett Corporation, The: *See*—
Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., 4,464,901, Cl. 60-606.000.
Gasser, Oswald: *See*—
Herold, Wolf-Dietrich; Gasser, Oswald; and Pieper, Gunter, 4,464,941, Cl. 73-864.130.
Gasser, Rupert J.: *See*—
Pagliaro, Fulvio A.; Franklin, James G.; and Gasser, Rupert J., 4,465,699, Cl. 426-428.000.
Gatewood, Sidney U., to Borg-Warner Corporation. Clutch disc with a variable torsional damper. 4,465,172, Cl. 192-106.200.
Gaus, Hermann: *See*—
Martin, Klaus; Jurgens, Gunter; and Gaus, Hermann, 4,464,955, Cl. 74-867.000.
Geary, Joseph M., to United States of America, Air Force. Turbulence measurement interferometer apparatus. 4,465,372, Cl. 356-359.000.
Gebhardt, Ronald E.; Haldeman, Richard C.; and Marten, Eric, to Ryan Homes, Inc. Method of assembling multi-unit, party wall residential buildings and fire-resistant party wall structure. 4,464,877, Cl. 52-745.000.
Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
Schupphaus, Herbert, 4,465,320, Cl. 299-81.000.
Gebr. Felss: *See*—
Kienhofer, Klaus, 4,464,917, Cl. 72-76.000.
Gebr. Pfeiffer AG: *See*—
Bacharach, Ottmar, 4,465,240, Cl. 241-121.000.
Gebruder Junghans GmbH: *See*—
Kaiser, Hans, 4,464,991, Cl. 102-233.000.
Maurer, Roland; Wolber, Robert; Obergfell, Walter; and Flaig, Hans, 4,465,378, Cl. 368-88.000.
Gehendges, Manfred: *See*—
Schmitt, Klaus; and Gehendges, Manfred, 4,465,363, Cl. 355-15.000.
Geiger, Lee S. Wall panel system. 4,464,873, Cl. 52-293.000.
Geisler, Klaus; Heins, Hans-Hermann; Coulon, Helmut; and Kriwalski, Reiner, to Bayer Aktiengesellschaft. Process for the purification of exhaust gases containing sulfuryl fluoride. 4,465,655, Cl. 423-240.000.
Gendre, Michel: *See*—
Naulin, Michel; and Gendre, Michel, 4,465,909, Cl. 200-5.00R.
General Electric Company: *See*—
Armor, Anthony F.; Shartrand, Allan C.; Noel, David A.; and Rominger, Kathryn M., 4,465,947, Cl. 310-59.000.
Bair, Eugene C., 4,464,826, Cl. 29-593.000.
Belke, Robert E., Jr.; and Shirk, Raymond A., 4,465,547, Cl. 156-629.000.
DiMassimo, Donald V.; May, John B.; Johnson, Brian C.; and Cooper, Jeffrey L., 4,465,970, Cl. 324-116.000.
Jernakoff, George, 4,465,982, Cl. 331-1.00A.
McHugh, James D., 4,464,935, Cl. 73-660.000.
Miller, Kenneth F.; and Hilakos, William, 4,465,820, Cl. 528-194.000.
Ohno, John M., 4,465,650, Cl. 264-60.000.
Payne, Thomas R., 4,465,924, Cl. 219-492.000.
Stoll, Donald H., 4,464,828, Cl. 29-622.000.
Szema, Li-Chieh, 4,465,284, Cl. 277-22.000.
Terry, Edgar R.; and Hudock, Joseph A., 4,464,975, Cl. 89-41.05M.
Zimmer, Mark F.; Smith, William E.; and Malpass, Donald F., Jr., 4,465,786, Cl. 502-169.000.
General Electric Company, p.l.c., The: *See*—
Price, Alistair J., 4,466,133, Cl. 455-303.000.
General Equipment & Mfg. Co., Inc.: *See*—
Fowler, Gerald L., 4,465,992, Cl. 335-205.000.
General Motors Corporation: *See*—
Cataldo, Roy S., 4,465,469, Cl. 474-201.000.
Maurer, Jerome D., 4,465,030, Cl. 123-198.00P.
General Signal Corporation: *See*—
Lane, Richard L., 4,465,550, Cl. 156-635.000.
Gennari, Federico, to Bioresearch S.p.A. Stable S-adenosylmethionine salts, the process for their preparation, and therapeutic compositions which contain them as active principle. 4,465,672, Cl. 424-180.000.
George Schmitt Research Corp.: *See*—
Golicz, Roman M.; Gunther, William H., Jr.; and Hough, James W., 4,464,878, Cl. 53-206.000.
Gerhard Hug GmbH: *See*—
Tittel, Klaus, 4,465,482, Cl. 604-280.000.
Gerphagnon, Jean-Louis: *See*—
Duclaux, Daniel; Boinet, Roger; Gerphagnon, Jean-Louis; and Baghe, Jean, 4,465,578, Cl. 204-245.000.
Gerum, Johannes; Nippe, Burkhard; Kober, Heinrich; and Kohler, Robert, to Agfa-Gevaert Aktiengesellschaft. Process for the production of magnetic dispersions containing binders. 4,465,608, Cl. 252-62.540.
Gervais, Guy A.: *See*—
Stokoe, Philip T.; and Gervais, Guy A., 4,465,913, Cl. 219-56.100.
Gewerkschaft Eisenhutte Westfalia: *See*—
Beckmann, Klaus, 4,465,406, Cl. 405-296.000.
Piester, Karl H.; Eggenstein, Friedrich; and Terhorst, Gunter, 4,465,407, Cl. 405-299.000.
Ghose, Rabindra N.; and Sauter, Walter A., to 501 American Nucleonics Corporation. Automatic separation system. 4,466,131, Cl. 455-278.000.
Giani, Roberto: *See*—
Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, 4,465,831, Cl. 544-26.000.
Gianolini, Giovanni: *See*—
Knirsch, Franco; and Gianolini, Giovanni, 4,465,389, Cl. 400-241.100.

Gibson, Albert; Haws, Lowell D.; and Mohler, Jonathan H., to United States of America, Energy. Integral low-energy thermite igniter. 4,464,989, Cl. 102-202.000.
Gibson, Peter J., to U.S. Philips Corporation. Microwave detector arrangement. 4,465,990, Cl. 333-247.000.
Giers, Alfred, to Carl Schenck AG. Procedure for transferring measured angle of unbalance position to a rotor and mechanism for implementing same. 4,464,934, Cl. 73-462.000.
Giese, Alexis A.: *See*—
Effron, Edward; Giese, Alexis A.; and Melin, Gerald A., 4,465,584, Cl. 208-10.000.
Gilker, Clyde: *See*—
Jindrick, James A.; Hurley, James R.; and Gilker, Clyde, 4,466,074, Cl. 364-569.000.
Gill, Michael J.: *See*—
Fish, Michael J.; and Gill, Michael J., 4,464,842, Cl. 33-344.000.
Gill, Peter J., to GKN Screws & Fasteners Limited. Fastener and driver combination. 4,464,957, Cl. 81-460.000.
Giller, Arnold; and Weil, Joachim, to Hoechst Aktiengesellschaft. Process for the preparation of reinforced rubber vulcanizates and use thereof. 4,465,807, Cl. 525-135.000.
Girard, Donald J.; O'Dell, Robert R.; Chanasyk, Albert J.; and Belknap, William M., to NCR Corporation. Method and apparatus for establishing priority between processing units having a common communication channel. 4,466,058, Cl. 364-200.000.
Giroux, Davis W. Apparatus for pulling an electric cable or wire. 4,465,261, Cl. 254-279.000.
Girrbach, Ingrid: *See*—
Girrbach, Werner; and Girrbach, Ingrid, 4,464,838, Cl. 30-149.000.
Girrbach, Werner; and Girrbach, Ingrid. Knife for peeling of tropical fruits. 4,464,838, Cl. 30-149.000.
Givens, Wyatt W., to Mobil Oil Corporation. Method for identifying complex lithologies in a subsurface formation. 4,464,930, Cl. 73-152.000.
GKN Group Services Limited: *See*—
Fry, Timothy S.; and Cole, Graham C., 4,465,292, Cl. 280-95.00R.
GKN Screws & Fasteners Limited: *See*—
Gill, Peter J., 4,464,957, Cl. 81-460.000.
Glaenzer Spicer: *See*—
Guimbretiere, Pierre L., 4,465,326, Cl. 308-191.000.
Glass, John R., to Mobil Oil Corporation. Hot jet evaporator. 4,465,554, Cl. 159-16.00R.
Glassman, Jacob A. Surgical headgear. 4,464,797, Cl. 2-199.000.
Glaverbel: *See*—
Laroche, Pierre; and Toussaint, Francois, 4,465,734, Cl. 428-317.100.
Glenn, Thomas J.: *See*—
Pond, David M.; and Glenn, Thomas J., 4,465,854, Cl. 560-265.000.
Gliniorz, Lothar; Dobler, Peter; and Schoettle, Klaus, to BASF Aktiengesellschaft. Magnetic tape transport apparatus. 4,465,247, Cl. 242-192.000.
Glonek, Robert L.; Kantor, Paul; and Perry, Loren R., to Glonek, Robert L. Structural foam swimming pool wall and brace and method of erecting same. 4,464,802, Cl. 4-506.000.
Glover, William, to Baker Perkins Holdings Limited. Wrapping machines. 4,464,883, Cl. 53-550.000.
Glowacki, Jerzy: *See*—
Platkiewicz, Leonard; Debski, Wlodzimierz; and Glowacki, Jerzy, 4,465,799, Cl. 523-457.000.
Goda, Wilfried, to Precitronic Gesellschaft. Device for the shooting simulation of sight-controlled missiles. 4,464,974, Cl. 89-41.00L.
Godschalk, Louis A., Jr.; and Bordelean, Nelson J., to American Can Company. Apparatus and process for molding a thermoplastic tube headpiece. 4,465,651, Cl. 264-161.000.
Goel, Anil B.; and Throckmorton, Peter E., to Ashland Oil, Inc. Manufacture of aryl esters. 4,465,633, Cl. 260-410.90R.
Goel, Anil B.: *See*—
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Goh, Atsushi: *See*—
Konno, Kazuhiko; Goh, Atsushi; Usui, Yoshihiro; and Ikeda, Kaoru, 4,465,507, Cl. 71-98.000.
Gohlke, Fritz J.: *See*—
Billenstein, Siegfried; Gohlke, Fritz J.; Hille, Martin; and Bohm, Roland, 4,465,817, Cl. 525-507.000.
Goi, Kowichi, to Laurel Bank Machine Co., Ltd. Automatic money depositing and disbursing machine. 4,465,925, Cl. 235-379.000.
Goi, Kowichi: *See*—
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,465,193, Cl. 209-534.000.
Gold, Harold; and Budzich, Tadeusz. Hydraulic fuse valve. 4,465,093, Cl. 137-498.000.
Goldfeder, Marc E.: *See*—
Bastian, Arlon L.; Goldfeder, Marc E.; and Hartung, Michael H., 4,466,059, Cl. 364-200.000.
Golicz, Roman M.; Gunther, William H., Jr.; and Hough, James W., to George Schmitt Research Corp. Mechanism and method of making an envelope. 4,464,878, Cl. 53-206.000.
Gompers, William J. Animal recovery. 4,464,859, Cl. 43-58.000.
Gonczy, Csaba: *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.
Gondo, Takeshi: *See*—
Maekawa, Tsukasa; Gondo, Takeshi; Takahashi, Shigeo; and Kume, Hidetoshi, 4,465,867, Cl. 568-652.000.
Maekawa, Tsukasa; Gondo, Takeshi; and Hayase, Syozo, 4,465,868, Cl. 568-652.000.
Goodyear Tire & Rubber Company, The: *See*—
Kleijwegt, Jacob, 4,464,892, Cl. 57-212.000.
Rossi, Robert K., 4,465,709, Cl. 427-209.000.
Gorike, Rudolf, to AKG Akustische u.Kino-Gerate Gesellschaft mbH. Microphone for stereo reception. 4,466,117, Cl. 381-26.000.
Gorman, Leonard F.; and Brooks, Harold E. Weighstations and remote control thereof. 4,465,151, Cl. 177-133.000.
Gorre, Luisa E.: *See*—
Pastor, Ricardo C.; Pastor, Antonio C.; Gorre, Luisa E.; and Chew, Remedios K., 4,465,656, Cl. 423-339.000.
Gotfried, Yechiel. Surgical device for connection of fractured bones. 4,465,065, Cl. 128-92.0BB.
Goto, Hiroshi, to Fujitsu Limited. Method of producing a walled emitter semiconductor device. 4,465,528, Cl. 148-187.000.
Goto, Kazuhiro: *See*—
Oe, Takanori; Tsuruda, Mineo; Goto, Kazuhiro; and Hisadome, Masao, 4,465,681, Cl. 424-248.400.
Gottsegen, Ronald B.; and Pate, John G. Programmable alarm system. 4,465,904, Cl. 179-5.00R.
Gould, Inc.: *See*—
Tanielian, Minas H., 4,465,577, Cl. 204-192.00C.
Graf, Laszlo : *See*—
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Graff, Herman; and Joseph, James D., to United States of America, Air Force. Electro-optical target detection. 4,465,940, Cl. 250-578.000.
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Hines, Thomas N., to Security Network International, Inc. Exterior mounted door and window alarm switch. 4,465,997, Cl. 340-542.000.

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Takeuchi, Koji; Ito, Nobuo; Abe, Masahiro; and Hirai, Kiyomiki, 4,465,830, Cl. 528-117.000.

Hiramatsu, Akira: *See*—
Murakami, Hiroyasu; Hiramatsu, Akira; and Katsuma, Makoto, 4,465,355, Cl. 354-475.000.

Hirao, Shozo: *See*—
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.

Hirata, Yoshihiro: *See*—
Arima, Hideaki; Nishimura, Tadashi; Yoneda, Masahiro; Fukumoto, Takaaki; and Hirata, Yoshihiro, 4,465,529, Cl. 148-188.000.

Hirobe, Hitoshi; Enomoto, Shigeo; Minakuchi, Tadashi; and Urata, Shinji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focusing device. 4,465,352, Cl. 354-406.000.

Hirohara, Hideo; Yamamoto, Hidefumi; Kawano, Emiko; Hattori, Mamoru; and Yamaguchi, Hisao, to Sumitomo Chemical Company, Limited. Method for disinfecting and washing of immobilized lactase. 4,465,772, Cl. 435-105.000.

Hirschmanner, Franz: *See*—
Brettbacher, Franz; Moshammer, Karl; Rom, Ernst; and Hirschmanner, Franz, 4,465,912, Cl. 219-10.49A.

Hisadome, Masao: *See*—
Oe, Takanori; Tsuruda, Mineo; Goto, Kazuhiro; and Hisadome, Masao, 4,465,681, Cl. 424-248.400.

Hissa, Robert E. Friction saw and handle assembly. 4,464,836, Cl. 30-92.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Aoyagi, Yukio; Ichiyama, Shuichi; and Murata, Yasuhiko, 4,464,898, Cl. 60-436.000.

Hitachi, Ltd.: *See*—
Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, 4,465,727, Cl. 428-138.000.
Ichiryu, Ken; Watanabe, Haruo; and Nemoto, Masami, 4,464,978, Cl. 91-459.000.
Kagohara, Hiromi; Iizuka, Nobuyuki; Fukui, Yutaka; and Sakamoto, Masahiko, 4,465,530, Cl. 148-410.000.
Konishi, Nobutake; Mori, Mutsuhiro; and Tanaka, Tomoyuki, 4,466,009, Cl. 357-30.000.
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.
Tokunaga, Michio; Kitano, Junjiro; Sagawa, Akio; Hayashi, Toshio; and Hamazato, Kazuo, 4,465,967, Cl. 323-285.000.
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Nonogaki, Saburo, 4,465,768, Cl. 430-296.000.
Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,465,611, Cl. 252-70.000.

Hitachi Maxell, Ltd.: *See*—
Togawa, Fumio; and Aoyama, Shigeo, 4,465,735, Cl. 428-329.000.

Hoashi, Takayuki: *See*—
Yoshida, Shigeru; Osabe, Akira; and Hoashi, Takayuki, 4,466,037, Cl. 360-133.000.

Hochberg, Richard B., to New England Nuclear Corporation. 16α Halogen substituted 3,17β-dihydroxy steroidal estrogens. 4,465,676, Cl. 424-238.000.

Hodogaya Chemical Co., Ltd.: *See*—
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, 4,465,761, Cl. 430-341.000.

Hoechst Aktiengesellschaft: *See*—
Billenstein, Siegfried; Gohlke, Fritz J.; Hille, Martin; and Bohm, Roland, 4,465,817, Cl. 525-507.000.
Giller, Arnold; and Weil, Joachim, 4,465,807, Cl. 525-135.000.
Grunbein, Wolfgang; Lendle, Wilhelm; Post, Hendrik W.; Richter, Heinz; and Rossberg, Manfred, 4,465,880, Cl. 570-258.000.
Sattelmeyer, Richard; Schmelzer, Heinz; and Gutte, Richard, 4,465,813, Cl. 525-366.000.
Schmitt, Klaus; and Gehendges, Manfred, 4,465,363, Cl. 355-15.000.
von der Eltz, Hans-Ulrich, 4,465,490, Cl. 8-400.000.
Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, 4,465,798, Cl. 523-414.000.
Wingen, Rainer; Horn, Klaus; and Lutz, Walter, 4,465,758, Cl. 430-288.000.

Hoehn, Gustave L., Jr., to Mobil Oil Corporation. Method for the magnetization of well casing. 4,465,140, Cl. 166-381.000.

Hoffmann, Gerhard: *See*—
Neumann, Peter; Etzbach, Karl-Heinz; Eilingsfeld, Heinz; and Hoffmann, Gerhard, 4,465,857, Cl. 564-251.000.

Hoffmann-La Roche Inc.: *See*—
Grass, Hansjorg; and Widmer, Erich, 4,465,567, Cl. 204-75.000.

Hogeboom, John G., to Northern Telecom Limited. CMOS Oscillator having positive feedback capacitor charged and discharged with constant currents. 4,465,983, Cl. 331-111.000.

Holden, John; and Green, Milton J., to Woodstream Corporation. Fishing rod with improved casting characteristics. 4,464,856, Cl. 43-18.500.

Hollon, Blake D.: *See*—
Hollon, Edmund D.; and Hollon, Blake D., 4,465,397, Cl. 404-84.000.

Hollon, Edmund D.; and Hollon, Blake D. Track surface laying. 4,465,397, Cl. 404-84.000.

Holman, J. Harrison; and Holman, Jay C. Method of convection cooking of food. 4,465,701, Cl. 426-523.000.

Holman, Jay C.: *See*—
Holman, J. Harrison; and Holman, Jay C., 4,465,701, Cl. 426-523.000.

Holmes, Paul M., to Aeroquip Corporation. Over center strap buckle. 4,464,811, Cl. 24-68.0CD.

Holmes, Rory A.; and Skistimas, Donald V., to Chicopee. Ribbed terry cloth-like nonwoven fabric and process and apparatus for making same. 4,465,726, Cl. 428-131.000.

Holt, Frederick R.: *See*—
Jordan, Richard; Bull, William; Ciardella, Robert L.; Taggart, Robert; and Holt, Frederick R., 4,466,033, Cl. 360-99.000.

Holz, Emil; and Hutzler, Hagen, to Hermann Finckh Maschinenfabrik GmbH & Co. Method and apparatus for treating waste paper. 4,465,591, Cl. 209-3.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hayashi, Tsutomu, 4,465,322, Cl. 303-6.00A.
Tanaka, Hideo, 4,465,037, Cl. 123-90.310.

Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei, 4,465,051, Cl. 123-486.000.

Honeywell, Inc.: *See*—
Kompelien, Arlon D., 4,465,229, Cl. 236-44.00E.

Honny Chemicals Company, Limited: *See*—
Kadooda, Tsuneo, 4,465,562, Cl. 204-38.00A.

Hood, Paul F.; and Locke, Frank W., to Champion International Corporation. Leak-proof carton. 4,465,227, Cl. 229-36.000.

Hoogovens Groep B.V.: *See*—
Buhrmann, Gerardus P.; and Steen, Adam, 4,465,514, Cl. 75-60.000.

Hooley, Charles M. Shopping cart with lower tray signalling device. 4,465,290, Cl. 280-33.99A.

Hooper, George D., to Electric Power Research Institute, Inc. Warm damper for a superconducting rotor. 4,465,106, Cl. 138-142.000.

Hooten, John A.: *See*—
Advani, Hira; and Hooten, John A., 4,466,065, Cl. 364-300.000.

Hoover, Charles C.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,465,009, Cl. 114-56.000.

Hopkins Manufacturing Corporation: *See*—
Hopkins, Ross E., 4,464,804, Cl. 15-42.000.

Hopkins, Ross E., to Hopkins Manufacturing Corporation. Handheld sweeper. 4,464,804, Cl. 15-42.000.

Hordis Brothers, Inc.: *See*—
Shea, John R., Jr.; Hall, A. Risher; and Hordis, Robert C., 4,464,874, Cl. 52-398.000.

Hordis, Robert C.: *See*—
Shea, John R., Jr.; Hall, A. Risher; and Hordis, Robert C., 4,464,874, Cl. 52-398.000.

Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, to Takeda Chemical Industries, Ltd. Alanyl-2-(5-hydroxy-2-oxo-pyrrolidin-3-yl)glycine. 4,465,844, Cl. 548-546.000.

Horimoto, Mitsuaki, to Minolta Camera Kabushiki Kaisha. Zoom lens system. 4,465,343, Cl. 350-428.000.

Horino, Shigeo: *See*—
Ohba, Hiroshi; and Horino, Shigeo, 4,465,192, Cl. 209-534.000.

Horiuchi, Masato; Hatazaki, Yoshinori; and Terada, Kouji, to Mitsui Toatsu Chemicals, Inc. Process for purifying methacrylamide. 4,465,856, Cl. 564-206.000.

Horn, Alan S., to Nelson Research & Development Company. Selective D-2 dopamine receptor agonist. 4,465,692, Cl. 424-330.000.

Horn, Klaus: *See*—
Wingen, Rainer; Horn, Klaus; and Lutz, Walter, 4,465,758, Cl. 430-288.000.

Hornbeck, Robert L., to Borg-Warner Chemicals, Inc. Coextrusion feedblock for making lightweight, rigid thermoplastic pipe. 4,465,449, Cl. 425-131.100.

Horner, Joseph L.; and Ludman, Jacques E., to United States of America, Air Force. Holographic directional coupler for fiber optic systems. 4,465,332, Cl. 350-96.190.

Horner, Michael; and Irgang, Matthias, to BASF Aktiengesellschaft. Ruthenium-on-charcoal and ruthenium-on-carbon black hydrogenation catalysts, their preparation and their use for selective hydrogenation of unsaturated carbonyl compounds. 4,465,787, Cl. 502-185.000.

Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Borated polyhydroxyalkyl sulfides and lubricants containing same. 4,465,605, Cl. 252-46.300.

Horwitz, Christopher M. Graded microstructured layers formed by vacuum etching. 4,465,551, Cl. 156-643.000.

Hosoi, Noriyuki: *See*—
Mikami, Takeshi; and Hosoi, Noriyuki, 4,465,756, Cl. 430-138.000.

Hough, James W.: *See*—
Golicz, Roman M.; Gunther, William H., Jr.; and Hough, James W., 4,464,878, Cl. 53-206.000.

Houseman, David L.; Jones, Thomas M.; Richmond, Michael S.; and Pilat, John F., to Data General Corporation. Digital data processing system responsive to instructions containing operation code modifiers. 4,466,057, Cl. 364-200.000.

Houts, Thomas M., to Technicon Instruments Corporation. Vitamin B_{12} and labelled derivatives for such assay. 4,465,775, Cl. 436-503.000.

Houtz, Kenneth E., to Dresser Industries, Inc. Wheel brake and lubrication system for a vehicle. 4,465,169, Cl. 192-4.00A.

Howard, Lawrence W.: *See*—
Hass, Robert T.; and Howard, Lawrence W., 4,465,329, Cl. 312-216.000.

Howe, Spencer D.: *See*—
Andrews, Harold E.; and Howe, Spencer D., 4,464,943, Cl. 74-5.460.
Howell, Jones V.; Miller, William R.; and Buchan, William A., to Archive Corporation. Digital tape erasure conditioning system. 4,466,027, Cl. 360-66.000.
Howeth, David F. Pneumatic cyclic event timing actuator and control circuit for use with air blast filter cleaning and bulk material bin blasting systems. 4,465,497, Cl. 55-273.000.
Howroyd, Lawrence H. Building construction. 4,464,868, Cl. 52-69.000.
Hoyt, Harold C., Jr.; and Greene, William J., to Teledyne-Walterboro, a Division of Teledyne Industries, Inc. Electric welder with current-voltage feedback circuit that provides desired slope curve. 4,465,920, Cl. 219-133.000.
Huang, Fu-chih; Jones, Howard; and Chan, Wan-Kit, to USV Pharmaceutical Corporation. 1,2-Diaza-3-one compounds, their use in treating hypertension and pharmaceutical compositions thereof. 4,465,679, Cl. 424-244.000.
Huang, Ho-Chung; Kumar, Mahesh; and Sechi, Franco N., to RCA Corporation. Predistortion circuit for a power amplifier. 4,465,980, Cl. 330-149.000.
Huang, John J.; Chen, Jung-Shou; and Mezei, Louis M., to Sherwood Medical Company. Standard or control material for glysocylated or total hemoglobin determination. 4,465,774, Cl. 436-15.000.
Huber, Hans P.; and Russer, Peter, to Licentia Patent-Verwaltungs-GmbH. Waveguide and method of manufacturing same. 4,465,336, Cl. 350-96.300.
Huchette, Michel: *See*—
Bussiere, Guy; and Huchette, Michel, 4,465,698, Cl. 426-102.000.
Hudock, Joseph A.: *See*—
Terry, Edgar R.; and Hudock, Joseph A., 4,464,975, Cl. 89-41.0SM.
Hudson, Charles S., to Atopsy Limited. Vee block. 4,465,268, Cl. 269-99.000.
Huffhines, Donald F.; and Roach, Robert E., to Mobil Oil Corporation. Compressed air distribution system. 4,465,094, Cl. 137-557.000.
Hughes Aircraft Company: *See*—
Andrews, Harold E.; and Howe, Spencer D., 4,464,943, Cl. 74-5.460.
Lau, Kreisler S. Y.; and Boschan, Robert H., 4,465,833, Cl. 544-246.000.
Lau, Kreisler S. Y.; and Boschan, Robert H., 4,465,833, Cl. 544-246.000.
Manoly, Arthur E., 4,465,987, Cl. 333-156.000.
Minear, Ronald J.; Brion, Harvey F.; and Terbrack, William H., 4,465,907, Cl. 179-156.00R.
Pastor, Ricardo C.; Pastor, Antonio C.; Gorre, Luisa E.; and Chew, Remedios K., 4,465,656, Cl. 423-339.000.
Hughes Tool Company: *See*—
Watkins, Bruce J., 4,465,134, Cl. 166-245.000.
Wittman, Robert H.; Adkins, David E.; and Haws, Ronnie E., 4,465,104, Cl. 138-89.000.
Humphreys, Duane A., to United States of America, Energy. Self-regulating flow control device. 4,465,103, Cl. 138-40.000.
Hunsucker, Jerry H., to International Minerals & Chemical Corp. Process for treatment of fibers. 4,465,732, Cl. 428-270.000.
Hunt, Jimmy J.: *See*—
Shull, Jessie J.; and Hunt, Jimmy J., 4,464,865, Cl. 51-105.00R.
Hunt, William C., III, to Mobil Oil Corporation. Cyclic thermal solvent recovery method utilizing visbroken produced crude oil. 4,465,138, Cl. 166-303.000.
Hurley, James R.: *See*—
Jindrick, James A.; Hurley, James R.; and Gilker, Clyde, 4,466,074, Cl. 364-569.000.
Hutzler, Hagen: *See*—
Holz, Emil; and Hutzler, Hagen, 4,465,591, Cl. 209-3.000.
Hwang, Uee Myong: *See*—
Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, 4,466,004, Cl. 346-74.400.
Hynek, Scott J.; Dantowitz, Philip; and Fuller, Henry H., to Foster-Miller Inc. Variable firing rate burner. 4,465,456, Cl. 431-62.000.
Iannucci, Robert A.; and Kleinsteiber, James R., to International Business Machines Corporation. Method and apparatus for division employing associative memory. 4,466,077, Cl. 364-767.000.
Ichikawa, Osamu: *See*—
Sadamasa, Tetsuo; Ichikawa, Osamu; and Beppu, Tatsuro, 4,465,543, Cl. 156-542.000.
Ichiryu, Ken; Watanabe, Haruo; and Nemoto, Masami, to Hitachi, Ltd. Servovalve apparatus. 4,464,978, Cl. 91-459.000.
Ichiyama, Shuichi: *See*—
Aoyagi, Yukio; Ichiyama, Shuichi; and Murata, Yasuhiko, 4,464,898, Cl. 60-436.000.
Idemitsu Kosan Company Limited: *See*—
Katabuchi, Tadashi, 4,465,523, Cl. 148-18.000.
Sato, Haruhito, 4,465,852, Cl. 560-247.000.
Igarashi, Akira: *See*—
Nakamura, Sukenori; and Igarashi, Akira, 4,466,007, Cl. 346-200.000.
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, to Nippon Soken, Inc.; and Toyoto Jidosha Kogyo Kabushiki Kaisha. Device for atomizing the fuel for an internal-combustion engine. 4,465,050, Cl. 123-472.000.
Iizuka, Nobuyuki: *See*—
Kagohara, Hiromi; Iizuka, Nobuyuki; Fukui, Yutaka; and Sakamoto, Masahiko, 4,465,530, Cl. 148-410.000.
Iizuka, Shigeo: *See*—
Saito, Tadao; and Iizuka, Shigeo, 4,465,183, Cl. 206-222.000.
Ikawa, Mitsugu: *See*—
Kizaki, Yoshio; and Ikawa, Mitsugu, 4,466,110, Cl. 375-108.000.
Ikeda, Kaoru: *See*—
Konno, Kazuhiko; Goh, Atsushi; Usui, Yoshihiro; and Ikeda, Kaoru, 4,465,507, Cl. 71-98.000.
Ikemoto, Kazuo: *See*—
Sakai, Yoshiya; Nagai, Yasuhiro; Ikemoto, Kazuo; Aoki, Takakiyo; and Kanehira, Hidehiko, 4,465,921, Cl. 219-146.240.
Illinois Tool Works Inc.: *See*—
Bakker, John A.; and Solarz, Gilbert, 4,464,813, Cl. 24-237.000.
Klygis, M. Julius, 4,465,180, Cl. 206-158.000.
Imai, Tamotsu, to UOP Inc. Solid phosphorus fluoride catalysts. 4,465,885, Cl. 585-466.000.
Imanaka, Yoshiaki: *See*—
Yamagishi, Toshio; Uchiyama, Hiroaki; Itoh, Ikuo; and Imanaka, Yoshiaki, 4,465,360, Cl. 355-14.00R.
Imperial Chemical Industries PLC: *See*—
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, 4,465,508, Cl. 71-103.000.
Kelland, John W., 4,465,785, Cl. 502-105.000.
McKenzie, Ian D., 4,465,783, Cl. 502-105.000.
Imperial Chemistry Industries PLC: *See*—
McKenzie, Ian D., 4,465,782, Cl. 502-104.000.
Imura, Shinichi: *See*—
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,465,193, Cl. 209-534.000.
In Situ Technology, Inc.: *See*—
Stoddord, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,465,401, Cl. 405-258.000.
Inaba, Hajimu; Nakashima, Seiichiro; Inagaki, Shigemi; and Ito, Susumu, to Fujitsu Fanuc Limited. Industrial robot. 4,465,424, Cl. 414-589.000.
Inagaki, Shigemi: *See*—
Inaba, Hajimu; Nakashima, Seiichiro; Inagaki, Shigemi; and Ito, Susumu, 4,465,424, Cl. 414-589.000.
Inamoto, Yoshiaki: *See*—
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,866, Cl. 568-618.000.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,869, Cl. 568-672.000.
Industrial Research Products, Inc.: *See*—
Peters, Richard W.; and Dippel, Martin, 4,466,119, Cl. 381-108.000.
Infrared Engineering Limited: *See*—
Edgar, Roger F., 4,465,929, Cl. 250-252.100.
Ing. C. Olivetti & C., S.p.A.: *See*—
Knirsch, Franco; and Gianolini, Giovanni, 4,465,389, Cl. 400-241.100.
Ingram, Gary L., to Spencer Wright Industries, Inc. Tufting machine needle bar shifting apparatus. 4,465,001, Cl. 112-79.00A.
Inhofer, Harold, to Mag-Dynamics, Inc. Flow divider and combiner for traction circuits. 4,465,089, Cl. 137-101.000.
Innovative Surgical Products, Inc.: *See*—
Blake, Larry W., 4,465,481, Cl. 604-280.000.
Inoue, Shojiro: *See*—
Mori, Keiichi; Inoue, Shojiro; and Takada, Manabu, 4,465,228, Cl. 236-20.00A.
Institut Francais du Petrole: *See*—
Denis, Jacques; Weill, Jerome; and Rojey, Alexandre, 4,465,609, Cl. 252-67.000.
Institut National de la Sante et de la Recherche Medicale: *See*—
Bisagni, Emile; Morin, Jacqueline; Averbeck, Dietrich; and Louis, Dubertret, 4,465,691, Cl. 424-256.000.
Instituto de Angeli S.p.A.: *See*—
Cereda, Enzo; Donetti, Arturo; Del Soldato, Piero; and Bergamaschi, Mario, 4,465,841, Cl. 548-346.000.
Intermedicat GmbH: *See*—
Mardorf, Robert; and Hesserg, Sigfried, 4,465,474, Cl. 604-154.000.
Mardorf, Robert; and Hessberg, Sigfried, 4,465,475, Cl. 604-155.000.
International Business Machines Corporation: *See*—
Advani, Hira; and Hooten, John A., 4,466,065, Cl. 364-300.000.
Bastian, Arlon L.; Goldfeder, Marc E.; and Hartung, Michael H., 4,466,059, Cl. 364-200.000.
Cammarano, Armando S.; and DiGiacomo, Giulio, 4,465,223, Cl. 228-198.000.
Evans, Howard E.; and Minor, James C., 4,465,646, Cl. 264-24.000.
Heins, Donald E.; and McGaffin, Robert C., 4,466,096, Cl. 370-85.000.
Iannucci, Robert A.; and Kleinsteiber, James R., 4,466,077, Cl. 364-767.000.
Meltzer, David, 4,466,099, Cl. 371-47.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Temes, Steven D.; Tyszkiewicz, Theodore J.; and Hanna, Marie R., 4,465,863, Cl. 568-417.000.
Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; and Zampino, Michael J., 4,465,695, Cl. 426-3.000.
International Harvester Co.: *See*—
Santis, Dean C., 4,464,933, Cl. 73-432.0AD.
International Jensen Incorporated: *See*—
Nation, Melvin S., 4,465,905, Cl. 179-115.5PC.
International Minerals & Chemical Corp.: *See*—
Hunsucker, Jerry H., 4,465,732, Cl. 428-270.000.
Kraemer, John F., 4,465,116, Cl. 164-527.000.

International Standard Electric Corporation: *See*—
Apitz, Siegfried; and Nonnenmann, Rolf, 4,465,926, Cl. 235-472.000.
International Telephone and Telegraph Corporation: *See*—
Cooper, Geoffrey K.; and Harruff, Lewis G., 4,465,864, Cl. 568-433.000.
Dantzig, Jonathan A.; and Tyler, Derek E., 4,465,118, Cl. 164-452.000.
InterNorth, Inc.: *See*—
Dickey, Leland C.; and Tayter, Maya, 4,464,844, Cl. 34-9.000.
Dickey, Leland C.; and Tayter, Maya, 4,464,847, Cl. 34-71.000.
Interparte Aktiengesellschaft: *See*—
Ertl, Herbert, 4,464,945, Cl. 74-15.600.
Intersil, Inc.: *See*—
Boyacigiller, Ziya G.; Brubaker, James L.; and Zis, Jerome C., 4,465,996, Cl. 340-347.0DA.
Intevep, S.A.: *See*—
Larrauri, Jose M.; Arias, Beatriz C.; and Galiasso, Roberto E., 4,465,784, Cl. 502-242.000.
Irgang, Matthias: *See*—
Horner, Michael; and Irgang, Matthias, 4,465,787, Cl. 502-185.000.
Isaka, Akihiko; and Takenaga, Tooru, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Speed governor for music box. 4,464,969, Cl. 84-95.00R.
Iseard, Barry S., to Oakwood Energy Group, Inc. Battery charging system utilizing optical gas sensor. 4,465,963, Cl. 320-46.000.
Iseki, Masahide: *See*—
Kajita, Hiroshi; Iseki, Masahide; Nakajima, Tadanobu; and Kawamori, Yoshizo, 4,465,272, Cl. 271-246.000.
ISF S.p.A.: *See*—
Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, 4,465,831, Cl. 544-26.000.
Ishida, Hideaki, to Casio Computer Co., Ltd. Rhythm data setting system for an electronic musical instrument. 4,464,966, Cl. 84-1.030.
Ishida, Toshihiko; Shiba, Haruo; and Sato, Takateru, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,466,036, Cl. 360-132.000.
Ishida, Toshinobu: *See*—
Nakamura, Hideki; Ishida, Toshinobu; and Yoshida, Takao, 4,465,487, Cl. 604-408.000.
Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, to Doryokuro Kakunenryo Kaihatsu Jigyodan; and Matsushita Electric Industrial Co., Ltd. Complex personal dosimeter. 4,465,936, Cl. 250-484.100.
Ishihara, Shoosaku: *See*—
Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, 4,465,727, Cl. 428-138.000.
Ishihara, Takeshi; and Kagawa, Keiichi, to Matsushita Electric Industrial Co., Ltd. Method of making semiconductor devices. 4,465,705, Cl. 427-38.000.
Ishii, Mitsuo: *See*—
Yoshimura, Hirofumi; Ishii, Mitsuo; Sawatani, Tadashi; and Minamino, Shigeru, 4,465,525, Cl. 148-37.000.
Ishikawa, Katsuhiko; Kawasaki, Yoshitaka; and Yotsuya, Motoo, to Matsushita Electric Industrial Co., Ltd. Liquid fuel burning device. 4,465,457, Cl. 431-201.000.
Ishikawa, Nobuo; and Kitazume, Tomoya, to Daikin Kogyo Co., Ltd. N,N-Dialkyl-3-oxo-3-alkyl-1,2-difluoropropenylamine. 4,465,859, Cl. 564-502.000.
Ishikawa, Takatoshi; Nakamura, Takashi; and Nakamura, Kotaro, to Fuji Photo Film Co., Ltd. Method for color developing color photographic silver halide light-sensitive material. 4,465,762, Cl. 430-376.000.
Iskra-Sozd Elektrokovinske Industrije n.sol.o: *See*—
Rehberger, Tomaz, 4,465,994, Cl. 338-164.000.
Isoya, Yukinori, to Aisan Kogyo Kabushiki Kaisha. Variable venturi carburetor. 4,465,643, Cl. 261-44.00C.
Istituto Donegani S.p.A.: *See*—
Chiusoli, Gian P.; Pallini, Luciano; and Salerno, Giuseppe, 4,465,634, Cl. 260-413.000.
Itek Corporation: *See*—
Breslow, Donald H., 4,465,928, Cl. 250-231.0SE.
Ito, Hiroshi: *See*—
Tohma, Hitoshi; Kimura, Tomohiro; and Ito, Hiroshi, 4,465,362, Cl. 355-15.000.
Ito, Nobuo: *See*—
Takeuchi, Koji; Ito, Nobuo; Abe, Masahiro; and Hirai, Kiyomiki, 4,465,830, Cl. 528-117.000.
Ito, Susumu: *See*—
Inaba, Hajimu; Nakashima, Seiichiro; Inagaki, Shigemi; and Ito, Susumu, 4,465,424, Cl. 414-589.000.
Itoh, Hiroshi: *See*—
Chikaraishi, Takayo; and Itoh, Hiroshi, 4,464,863, Cl. 49-213.000.
Itoh, Ikuo: *See*—
Yamagishi, Toshio; Uchiyama, Hiroaki; Itoh, Ikuo; and Imanaka, Yoshiaki, 4,465,360, Cl. 355-14.00R.
Itoh, Takaaki: *See*—
Nakamura, Norihiko; Katou, Takashi; Itoh, Takaaki; and Morino, Toshiharu, 4,465,642, Cl. 261-44.00C.
Itoh, Takeji; and Ono, Nobutaka, to Osaka Bobbin Kabushiki Kaisha. Hydro-extracting apparatus for cheeses of yarn. 4,464,846, Cl. 34-58.000.
Itri, Gary; and Riley, Mary. Portable expandable barrier. 4,465,262, Cl. 256-24.000.
ITT Industries, Inc.: *See*—
Coates, David, 4,465,338, Cl. 350-350.00S.
Iuchi, Tohru; Watanabe, Kunitoshi; Shibata, Toshihiko; and Kawamura, Tetsuro, to Nippon Steel Corporation. Method of and an apparatus for measuring surface temperature and emmissivity of a heated material. 4,465,382, Cl. 374-9.000.
Iwagami, Hisao: *See*—
Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamanaka, Shigeru, 4,465,631, Cl. 260-239.100.
Iwanami, Masao, to Fuji Electric Co., Ltd. Circuit for washing a water-feeding system in automatic beverage vending machines. 4,465,210, Cl. 222-148.000.
Iwasawa, Shigeru, to Bridgestone Tire Company, Limited. Ink ribbon cartridge pinch roller. 4,465,388, Cl. 400-196.100.
Iwata, Minoru: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Iwayanagi, Takao: *See*—
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Nonogaki, Saburo, 4,465,768, Cl. 430-296.000.
Ixo, Inc.: *See*—
Barber, Andrew C., 4,465,903, Cl. 179-2.00C.
Izu, Masatsugu; and Cannella, Vincent D., to Energy Conversion Devices, Inc. Method for eliminating short and latent short circuit current paths in photovoltaic devices. 4,464,823, Cl. 29-572.000.
J. D. Moore Engineering, Inc.: *See*—
Moore, James D., 4,465,166, Cl. 188-278.000.
J J Enterprises Inc., International: *See*—
Outlaw, Joyce, 4,464,906, Cl. 62-93.000.
J. M. Voith GmbH: *See*—
Gross, Harald, 4,465,431, Cl. 416-31.000.
Jackson, Fred N.: *See*—
McCay, Johnny A.; Owens, Arthur H.; and Jackson, Fred N., 4,464,841, Cl. 33-174.00R.
Jackson, Kenneth R.: *See*—
Taldo, Terry J.; and Jackson, Kenneth R., 4,465,522, Cl. 134-10.000.
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain. Isomerization of paraffins or olefins with bridged clays. 4,465,892, Cl. 585-666.000.
Jacquet, Maurice; and Boidet, Jacques, to Valeo. Casing for a heat exchanger in a heater or air conditioner installation for a motor vehicle. 4,465,124, Cl. 165-67.000.
Jagenberg AG: *See*—
Welp, Ewald G., 4,465,243, Cl. 242-66.000.
Jager, Gerhard: *See*—
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, 4,465,680, Cl. 424-245.000.
Jakob, Wolfgang: *See*—
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,839, Cl. 548-310.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, 4,465,840, Cl. 548-310.000.
Jalbert, Domina C. Sail and method of construction. 4,465,010, Cl. 114-103.000.
James Howden Australia Pty. Limited: *See*—
Stephenson, Robert G., 4,465,498, Cl. 55-341.0NT.
Jamet, Daniel: *See*—
Mauclere, Bernard; and Jamet, Daniel, 4,465,899, Cl. 174-52.00R.
Jan, Gerald: *See*—
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, 4,465,763, Cl. 430-462.000.
Janome Sewing Machine Co., Ltd.: *See*—
Eguchi, Yasukata, 4,465,070, Cl. 128-334.00R.
Makabe, Hachiro; and Kongoh, Takeshi, 4,465,003, Cl. 112-158.00E.
Janome Sewing Machine Industry Co., Ltd.: *See*—
Eguchi, Yasukata; Hanyu, Susumu; and Nagasaka, Chuji, 4,465,005, Cl. 112-270.000.
Jansen, Gerardus L. M.; and Vos, Gerardus J. J., to U.S. Philips Corporation. Data communication system. 4,466,000, Cl. 340-825.500.
Japan Bano'k Co., Ltd.: *See*—
Furutsu, Akira, 4,465,217, Cl. 227-67.000.
Furutsu, Akira, 4,465,218, Cl. 227-67.000.
Japan Carlit Co., Ltd., The: *See*—
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, 4,465,509, Cl. 71-119.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Yoshida, Yoshiteori; and Shinohara, Hironobu, 4,465,853, Cl. 560-262.000.
Jasko, James J.; and Domek, Susan M., to SCM Corporation. Hard butter and process for making same. 4,465,703, Cl. 426-607.000.
Jehmlich, Rolf; and Herchenbach, Horst, to Klockner-Humboldt-Deutz A.G. Method and apparatus for the removal of objectionable volatile compounds from hot gases. 4,465,520, Cl. 106-100.000.
JENAer Glaswerk Schott & Gen.: *See*—
Baucke, Friedrich G. K.; Krause, Dieter; Metz, Bernd; Paquet, Volker; and Zauner, Johannes, 4,465,339, Cl. 350-357.000.
Jenkins, Leonard A.; and Turner, Terence A., to Metal Box PlC. Decorating metal containers. 4,465,489, Cl. 8-471.000.
Jensen, Dale H.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,465,009, Cl. 114-56.000.
Jensen, Niels; D.; and Nielsen, Kurt F., to Grundfos A/S. Pump comprising a canned motor. 4,465,437, Cl. 417-366.000.
Jernakoff, George, to General Electric Company. Phase-locked loop with reduced frequency modulation. 4,465,982, Cl. 331-1.00A.
Jervis B. Webb Company: *See*—
Dehne, Clarence A., 4,464,997, Cl. 104-172.00S.

Jindrick, James A.; Hurley, James R.; and Gilker, Clyde, to McGraw-Edison Company. Power outage timer. 4,466,074, Cl. 364-569.000.
John R. Nalbach Engineering Co., Inc.: *See*—
Nalbach, John C., 4,465,111, Cl. 141-79.000.
John Wyeth & Brother Limited: *See*—
Mughal, Ahmed S., 4,465,838, Cl. 548-236.000.
Johnson, Brian C.: *See*—
DiMassimo, Donald V.; May, John B.; Johnson, Brian C.; and Cooper, Jeffrey L., 4,465,970, Cl. 324-116.000.
Johnson, David E., to Mobil Oil Corporation. Method and system for extruding tubular foamed polymer sheet. 4,465,649, Cl. 264-51.000.
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., to AMP Incorporated. Optical waveguide terminating apparatus. 4,464,817, Cl. 29-33.00M.
Johnson, Robert M., to Green Mountain Products. Method for deodorizing animal waste and preparing pet litter. 4,465,019, Cl. 119-1.000.
Johnson, Wilfred V., to U.S. Fire Control Corporation. Fire sprinkler apparatus. 4,465,141, Cl. 169-37.000.
Jonas, Kenneth J.: *See*—
Wolbrink, David W.; Jonas, Kenneth J.; Butt, Roland E.; and Busch, Robert W., 4,465,256, Cl. 248-544.000.
Jones, Howard: *See*—
Huang, Fu-chih; Jones, Howard; and Chan, Wan-Kit, 4,465,679, Cl. 424-244.000.
Jones, Thomas M.: *See*—
Houseman, David L.; Jones, Thomas M.; Richmond, Michael S.; and Pilat, John F., 4,466,057, Cl. 364-200.000.
Jonsson, Finn, to ASEA Aktiebolag. Handling equipment for sheet presses. 4,465,426, Cl. 414-751.000.
Joo', Louis A.: *See*—
Juel, Leslie H.; Joo', Louis A.; and Tucker, Kenneth W., 4,465,581, Cl. 204-290.00R.
Jordan, Richard; Bull, William; Ciardella, Robert L.; Taggart, Robert; and Holt, Frederick R., to Apple Computer, Inc. Disk drive with automatic disc clamping and ejecting. 4,466,033, Cl. 360-99.000.
Joseph, Brian J.; and Williams, James O., to Eastman Kodak Company. Magnetic brush developer apparatus. 4,465,356, Cl. 355-3.0DD.
Joseph, James D.: *See*—
Graff, Herman; and Joseph, James D., 4,465,940, Cl. 250-578.000.
Jousselin, Charles: *See*—
Boujet, Jean-Pierre; Gaille, Gerard; and Jousselin, Charles, 4,465,989, Cl. 333-209.000.
Judd, Robert K.: *See*—
Willard, Bernard S.; and Judd, Robert K., 4,466,083, Cl. 367-175.000.
Juel, Leslie H.; Joo', Louis A.; and Tucker, Kenneth W., to Great Lakes Carbon Corporation. Composite of TiB_2-graphite. 4,465,581, Cl. 204-290.00R.
Julius Blum GmbH: *See*—
Rock, Erich; and Brunner, Josef, 4,465,324, Cl. 308-3.800.
Jung, Dietmar: *See*—
Burkert, Hans; Hartmann, Juergen; Jung, Dietmar; Heide, Wilfried; Hartmann, Heinrich; and Spoor, Herbert, 4,465,599, Cl. 210-734.000.
Linhart, Friedrich; Hartmenn, Juergen; Jung, Dietmar; Hartmann, Heinrich; and Spoor, Herbert, 4,465,555, Cl. 162-168.200.
Junge, Bodo: *See*—
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans P.; and Puls, Walter, 4,465,684, Cl. 424-250.000.
Jurgens, Gunter: *See*—
Martin, Klaus; Jurgens, Guster; and Gaus, Hermann, 4,464,955, Cl. 74-867.000.
K-Jack Engineering Company, Inc.: *See*—
Chalabian, Jack S., 4,465,207, Cl. 221-241.000.
Kabushiki Kaisha Bandai: *See*—
Onodera, Takehiko, 4,464,860, Cl. 446-491.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Kawashima, Kazuo; and Minamida, Kazukiyo, 4,465,149, Cl. 177-1.000.
Matsumoto, Seishi, 4,465,150, Cl. 177-25.000.
Kabushiki Kaisha Kenshin: *See*—
Hashimoto, Kenji, 4,464,956, Cl. 81-3.200.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Sato, Masayuki, 4,465,168, Cl. 192-3.570.
Kabushiki Kaisha Meidensha: *See*—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,465,991, Cl. 335-151.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Isaka, Akihiko; and Takenaga, Tooru, 4,464,969, Cl. 84-95.00R.
Kabushiki Kaisha Suwa Seikosha: *See*—
Misawa, Toshiyuki; and Asakawa, Tatsushi, 4,465,379, Cl. 368-202.000.
Yajima, Torao, 4,465,959, Cl. 318-696.000.
Kadooda, Tsuneo, to Honny Chemicals Company, Limited. Process for surface treatment of aluminum article. 4,465,562, Cl. 204-38.00A.
Kaelin, Joseph R. Rotary surface aerator with adjustable liquid transporting units. 4,465,645, Cl. 261-87.000.
Kagawa, Keiichi: *See*—
Ishihara, Takeshi; and Kagawa, Keiichi, 4,465,705, Cl. 427-38.000.
Kagohara, Hiromi; Iizuka, Nobuyuki; Fukui, Yutaka; and Sakamoto, Masahiko, to Hitachi, Ltd. Gas turbine nozzle having superior thermal fatigue resistance. 4,465,530, Cl. 148-410.000.
Kahkipuro, Matti: *See*—
Kontturi, Risto; Kahkipuro, Matti; and Saransaari, Pertti, 4,466,053, Cl. 363-129.000.
Kai, Hisao, to Asahi-Dow Limited. Cutting edge for dispensing container. 4,465,215, Cl. 225-48.000.
Kai, Norichika: *See*—
Musto, Richard L.; and Kai, Norichika, 4,464,999, Cl. 110-106.000.
Kain, Maurits R.: *See*—
Burkhalter, David W.; and Kain, Maurits R., 4,465,416, Cl. 414-217.000.
Kaiser Aluminum & Chemical Corporation: *See*—
Keller, Leander L., 4,465,091, Cl. 137-243.600.
Kaiser, Hans, to Gebruder Junghans GmbH. Safety device for fuses of spinning projectiles. 4,464,991, Cl. 102-233.000.
Kajita, Hiroshi; Iseki, Masahide; Nakajima, Tadanobu; and Kawamori, Yoshizo, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,465,272, Cl. 271-246.000.
Kake, Hiroshi: *See*—
Hata, Akio; Kake, Hiroshi; and Fujii, Noriki, 4,465,615, Cl. 252-511.000.
Kamath, Krishna, to United States of America, Energy. Fire flood method for recovering petroleum from oil reservoirs of low permeability and temperature. 4,465,135, Cl. 166-261.000.
Kaminski, Elton G.; and McEldowney, Carl F., to Stolle Corporation, The. Pull tab for easy open end. 4,465,204, Cl. 220-269.000.
Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,465,605, Cl. 252-46.300.
Kamp, Anthony W.: *See*—
Feenstra, Robijn; and Kamp, Anthony W., 4,465,147, Cl. 175-73.000.
Kan, Peter T.; Schaaf, Robert L.; Medaugh, Lewis N.; and Volz, William E., to BASF Wyandotte Corporation. Process for using sediments developed during storage of pure MDI. 4,465,638, Cl. 260-453.0SP.
Kanayama, Kenzi, to Omron Tateisi Electronics Co. Communication control system. 4,466,125, Cl. 455-56.000.
Kanbe, Junichiro: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,465,750, Cl. 430-57.000.
Kanehira, Hidehiko: *See*—
Sakai, Yoshiya; Nagai, Yasuhiro; Ikemoto, Kazuo; Aoki, Takakiyo; and Kanehira, Hidehiko, 4,465,921, Cl. 219-146.240.
Kano, Tokio: *See*—
Kato, Masahiko; and Kano, Tokio, 4,465,938, Cl. 250-576.000.
Kansai Paint Co., Ltd.: *See*—
Nakayama, Yasuharu, 4,465,803, Cl. 524-460.000.
Kantor, Paul: *See*—
Glonek, Robert L.; Kantor, Paul; and Perry, Loren R., 4,464,802, Cl. 4-506.000.
Kao Corporation: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,465,664, Cl. 424-71.000.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,869, Cl. 568-672.000.
Kao Soap Co., Ltd.: *See*—
Saito, Tadao; and Iizuka, Shigeo, 4,465,183, Cl. 206-222.000.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,866, Cl. 568-618.000.
Karden, Karl G., to Atlas Copco Aktiebolag. Pneumatic power tool with speed governor and overspeed safety device. 4,465,443, Cl. 418-43.000.
Karl Hopt GmbH: *See*—
Dolderer, Erich A., 4,465,052, Cl. 123-527.000.
Karl Rabofsky GmbH: *See*—
Feiten, Erwin E.; and Lehmann, Clemens M., 4,465,214, Cl. 223-30.000.
Lehmann, Clemens M.; Feiten, Erwin E.; and zur Nieden, Erich E., 4,465,213, Cl. 223-30.000.
Karpanty, David J., to Scott & Fetzer Company, The. Scrubbing machine with liquid recirculation. 4,464,810, Cl. 15-320.000.
Karr, Gerald W., to Beloit Corporation. Expanding core chuck. 4,465,244, Cl. 242-72.100.
Karwowski, Zbigniew T.: *See*—
Tihanyi, George; and Karwowski, Zbigniew T., 4,465,328, Cl. 312-215.000.
Kashmer, James S.; Klimbach, John K.; and Vendetti, Randall P., to Becton, Dickinson and Company. Suction canister with unitary shut-off valve and filter features. 4,465,485, Cl. 604-320.000.
Kasuga, Akira: *See*—
Miyatuka, Hajime; Kasuga, Akira; Matsufuji, Akihiro; and Sugisaki, Tsutomu, 4,465,737, Cl. 428-339.000.
Kasugai, Akiyo: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,465,742, Cl. 428-621.000.
Kasuya, Kazuki, to Chlorine Engineers Corp. Ltd. Cathode for use in electrolysis. 4,465,580, Cl. 204-290.00R.
Katabuchi, Tadashi, to Idemitsu Kosan Company Limited. Method of quenching metals. 4,465,523, Cl. 148-18.000.
Kataoka, Hiroyuki: *See*—
Arai, Yoshio; and Kataoka, Hiroyuki, 4,466,123, Cl. 382-55.000.
Yoshida, Masaaki; and Kataoka, Hiroyuki, 4,465,353, Cl. 354-415.000.
Kataoka, Ryuji: *See*—
Morozumi, Takuro; Nakamura, Mitsuo; Ohgami, Masaaki; and Kataoka, Ryuji, 4,465,048, Cl. 123-440.000.
Katayama, Shitomi: *See*—
Senaha, Susumu; Chiba, Tetsuya; Ohno, Akira; and Katayama, Shitomi, 4,465,711, Cl. 427-379.000.

Kato, Katsunori: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,465,766, Cl. 430-552.000.
Kato, Masahiko; and Kano, Tokio, to Olympus Optical Co., Ltd. Apparatus for detecting a particle agglutination pattern. 4,465,938, Cl. 250-576.000.
Kato, Toranosuke: *See*—
Yamazaki, Shinichiro; Manabe, Takaki; and Kato, Toranosuke, 4,465,158, Cl. 180-271.000.
Kato, Toshikazu, to Olympus Optical Co., Ltd. Cassette loading/unloading apparatus for cassette tape recorder. 4,466,030, Cl. 360-96.500.
Katou, Takashi: *See*—
Nakamura, Norihiko; Katou, Takashi; Itoh, Takaaki; and Morino, Toshiharu, 4,465,642, Cl. 261-44.00C.
Katsuma, Makoto: *See*—
Murakami, Hiroyasu; Hiramatsu, Akira; and Katsuma, Makoto, 4,465,355, Cl. 354-475.000.
Katsura, Yuji: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,465,647, Cl. 264-29.600.
Kaufmann, Kenneth M., to Pako Corporation. Automatic fixed-quantity/fixed-time anti-oxidation replenisher control system. 4,466,072, Cl. 364-502.000.
Kawagoe, Nobukazu: *See*—
Yuasa, Yoshio; and Kawagoe, Nobukazu, 4,465,370, Cl. 356-224.000.
Kawaguchi, Yoshio: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
Kawai, Hisasi: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Kawai Musical Instrument MFG. Co., Ltd.: *See*—
Deutsch, Ralph, 4,464,965, Cl. 84-1.010.
Kawamori, Yoshizo: *See*—
Kajita, Hiroshi; Iseki, Masahide; Nakajima, Tadanobu; and Kawamori, Yoshizo, 4,465,272, Cl. 271-246.000.
Kawamura, Akihisa; Mikami, Noboru; and Yukiyoshi, Atsushi, to Matsushita Electric Industrial Co., Ltd. Horn speaker. 4,465,160, Cl. 181-192.000.
Kawamura, Kouichi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive materials. 4,465,751, Cl. 430-64.000.
Kawamura, Tetsuro: *See*—
Iuchi, Tohru; Watanabe, Kunitoshi; Shibata, Toshihiko; and Kawamura, Tetsuro, 4,465,382, Cl. 374-9.000.
Kawano, Emiko: *See*—
Hirohara, Hideo; Yamamoto, Hidefumi; Kawano, Emiko; Hattori, Mamoru; and Yamaguchi, Hisao, 4,465,772, Cl. 435-105.000.
Kawano, Hisao; Naito, Shun-ichi; and Shibata, Yuji, to Fujitsu Limited. Speech path control system. 4,466,095, Cl. 370-63.000.
Kawara, Tatsuo: *See*—
Tanaka, Hisami; Takenouchi, Osamu; and Kawara, Tatsuo, 4,465,753, Cl. 430-79.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Onishi, Yoji; and Oki, Toshinori, 4,465,157, Cl. 180-228.000.
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparing high polymeric substance having saccharide side chains. 4,465,827, Cl. 536-18.600.
Kawasaki, Yoshitaka: *See*—
Ishikawa, Katsuhiko; Kawasaki, Yoshitaka; and Yotsuya, Motoo, 4,465,457, Cl. 431-201.000.
Kawashima, Kazuo; and Minamida, Kazukiyo, to Kabushiki Kaisha Ishida Koki Seisakusho. Method of zero adjustment for combinatorial weighing or counting system. 4,465,149, Cl. 177-1.000.
Kelland, John W., to Imperial Chemical Industries PLC. Composition production and use. 4,465,785, Cl. 502-105.000.
Keller, Leander L., to Kaiser Aluminum & Chemical Corporation. Improved self-grinding valve. 4,465,091, Cl. 137-243.600.
Kelman, Charles D. Apparatus for and method of irrigating and aspirating an eye. 4,465,470, Cl. 604-27.000.
Kendall Company, The: *See*—
Cianci, James P., 4,465,484, Cl. 604-317.000.
Kennedy, James V.: *See*—
Occelli, Mario L.; and Kennedy, James V., 4,465,588, Cl. 208-120.000.
Occelli, Mario L.; and Kennedy, James V., 4,465,779, Cl. 502-63.000.
Kennedy, William: *See*—
Sabelman, Eric E.; Koogle, Timothy A.; and Kennedy, William, 4,465,478, Cl. 604-224.000.
KenoGard AB: *See*—
Estberg, Magnus F. O., 4,464,848, Cl. 34-92.000.
Kepler, Charles E.: *See*—
Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., 4,464,908, Cl. 62-235.100.
Kermer, Wolf-Dieter: *See*—
Grund, Norbert; Hansen, Guenter; and Kermer, Wolf-Dieter, 4,465,628, Cl. 260-158.000.
Kern, Gilbert G. Suspended woodbeam ceiling construction. 4,464,876, Cl. 52-484.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Dittrich, Hans; Frey, Hartmut; and Penzhorn, Ralf-Dieter, 4,464,905, Cl. 62-55.500.
Kerotest Manufacturing Corp.: *See*—
Conley, Richard W.; and Tremblay, Richard P., 4,465,260, Cl. 251-305.000.
Kershner, Larry D., to Dow Chemical Company, The. Preparation of 5-methyl-2-oxazolidinones. 4,465,837, Cl. 548-229.000.
Kervagoret, Gilbert, to Societe Anonyme D.B.A. Distribution apparatus, especially for assisted steering system. 4,465,099, Cl. 137-625.230.
Kidowaki, Yoshimasa; and Yonemoto, Akira. Method and apparatus for controlling current level in arc discharge melting of material to be precision cast. 4,465,119, Cl. 164-457.000.
Kienhofer, Klaus, to Gebr. Felss. Swaging machine. 4,464,917, Cl. 72-76.000.
Kikuzawa, Kenji; and Akasaka, Shozo, to Asahi Kasei Kogyo Kabushiki Kaisha. Artificial reef assembly construction and a method. 4,465,399, Cl. 405-32.000.
Kim, Chul Jin: *See*—
Cheigh, Hong Sik; Kim, Chul Jin; and Kim, Dong Chul, 4,465,447, Cl. 425-72.00R.
Kim, Dong Chul: *See*—
Cheigh, Hong Sik; Kim, Chul Jin; and Kim, Dong Chul, 4,465,447, Cl. 425-72.00R.
Kimura, Kazuaki: *See*—
Tamaki, Hiroshi; Ohtomo, Fumio; and Kimura, Kazuaki, 4,465,373, Cl. 356-374.000.
Kimura, Tomohiro: *See*—
Tohma, Hitoshi; Kimura, Tomohiro; and Ito, Hiroshi, 4,465,362, Cl. 355-15.000.
Kinard, Winifred; and Fujitaki, Roy K., to Kinard, Winifred. Card file box. 4,465,187, Cl. 206-425.000.
Kinbara, Minoru: *See*—
Toyoda, Hiroaki; Kinbara, Minoru; and Nakai, Akira, 4,465,285, Cl. 277-25.000.
King, James P., to Pennwalt Corporation. Lubricating compositions and process using complex metal chalcogenides. 4,465,604, Cl. 252-37.200.
King Sprout Products, Inc.: *See*—
Strahl, David M., 4,465,696, Cl. 426-63.000.
Kinjo, Tetsuo, to Yamanaka, Shizuo. Pen nib construction. 4,465,391, Cl. 401-230.000.
Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Information processing system including a one-chip arithmetic control unit. 4,466,055, Cl. 364-200.000.
Kioritz Corporation: *See*—
Masuda, Isao; and Kondo, Tadashige, 4,465,331, Cl. 339-14.00R.
Kiritani, Masataka; and Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Pressure fixable electrostatographic toner material comprising encapsulated particles containing curing agent. 4,465,755, Cl. 430-111.000.
Kiriyama, Satoru; and Suzuki, Mikiji, to Toyota Jidosha Kabushiki Kaisha. Method for controlling welding current. 4,465,918, Cl. 219-110.000.
Kiriyama, Takashi; and Yamaguchi, Chiyomi, to Nippon Steel Corporation. Method for repairing refractory wall of furnace. 4,465,648, Cl. 264-30.000.
Kirkham, Arthur J., Jr. Backpack and sleeping bag system. 4,466,124, Cl. 383-2.000.
Kirschbaum, Herbert S., to Westinghouse Electric Corp. Permanent split capacitor single phase electric motor system. 4,465,962, Cl. 318-817.000.
Kishimoto, Takashi: *See*—
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.
Kiss, Pal: *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.
Kitano, Junjiro: *See*—
Tokunaga, Michio; Kitano, Junjiro; Sagawa, Akio; Hayashi, Toshio; and Hamazato, Kazuo, 4,465,967, Cl. 323-285.000.
Kitano, Yoshiteru, to Koritsu Machine Industries Limited. Coke guide car having load distributing structure. 4,465,558, Cl. 202-262.000.
Kitazume, Tomoya: *See*—
Ishikawa, Nobuo; and Kitazume, Tomoya, 4,465,859, Cl. 564-502.000.
Kizaki, Yoshio; and Ikawa, Mitsugu, to Clarion Co., Ltd. Artificial sync signal adding circuit. 4,466,110, Cl. 375-108.000.
Klauke, Erich: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,465,682, Cl. 424-248.570.
Kleijwegt, Jacob, to Goodyear Tire & Rubber Company, The. Metallic cable for reinforcing elastomeric articles. 4,464,892, Cl. 57-212.000.
Klein, Howard P.; and Speranza, George P., to Texaco Inc. (parent). Process for preparing polyol-catalyst mixtures useful in the preparation of rigid polyurethane cellular products. 4,465,791, Cl. 521-115.000.
Klein, Howard P.: *See*—
Cuscurida, Michael; and Klein, Howard P., 4,465,858, Cl. 564-477.000.

Kleinsteiber, James R.: *See*—
Iannucci, Robert A.; and Kleinsteiber, James R., 4,466,077, Cl. 364-767.000.

Klimbach, John K.: *See*—
Kashmer, James S.; Klimbach, John K.; and Vendetti, Randall P., 4,465,485, Cl. 604-320.000.

Klinsmann, Uwe: *See*—
Leyrer, Reinhold J.; Saenger, Dietrich; and Klinsmann, Uwe, 4,465,760, Cl. 430-325.000.

Klockner-Humboldt-Deutz AG: *See*—
Kryczus, Alfred; and Pufal, Rolf, 4,465,265, Cl. 266-226.000.

Klockner-Humboldt-Deutz A.G.: *See*—
Jehmlich, Rolf; and Herchenbach, Horst, 4,465,520, Cl. 106-100.000.
Kupper, Heinz, 4,465,237, Cl. 239-533.300.

Klockner-Werke Aktiengesellschaft: *See*—
Weber, Lothar; Wojtek, Friedhelm; and Schwarzbach, Horst, 4,464,831, Cl. 29-825.000.

Klygis, M. Julius, to Illinois Tool Works Inc. Multi-package and multi-packaging device. 4,465,180, Cl. 206-158.000.

Knauff, Robert J. Electromechaaical frequency generator-modulator kinetic storage device. 4,465,949, Cl. 310-81.000.

Knirsch, Franco; and Gianolini, Giovanni, to Ing. C. Olivetti & C., S.p.A. Thermosensitive inked element for non-impact printers. 4,465,389, Cl. 400-241.100.

Knoke, Jurgen; Buchwald, Holger; and Fehlhaber, Jurgen, to Carl Freudenberg, Firma. Fixation insert with improved flash-through safety and method for manufacturing the same. 4,465,723, Cl. 428-90.000.

Knoll International, Inc.: *See*—
Zelkowitz, Hyman L., 4,465,534, Cl. 156-91.000.

Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Aminopropiophenone derivatives and fungicidal use. 4,465,678, Cl. 424-244.000.

Knorr-Bremse GmbH: *See*—
Saumweber, Eckart; Beckmann, Heinrich; and Ottersbach, Jens, 4,466,066, Cl. 364-426.000.

Knudsen, Poul N. Revetment for protecting the inclined surfaces of beaches, shores, rivers or channels, and of structures such as moles, dikes or channel walls, located in these places, against erosion by waves and flowing water. 4,465,398, Cl. 405-16.000.

Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, to Ricoh Company, Ltd. Thermomagnetic recording. 4,466,004, Cl. 346-74.400.

Kobayashi, Robert J.; Narcarrow, James H.; and Alger, Jeffrey L., to Garrett Corporation, The. Turbocharger combustor system. 4,464,901, Cl. 60-606.000.

Kobayashi, Tatsuo: *See*—
Sato, Yasuyuki; Nakamura, Norihiko; and Kobayashi, Tatsuo, 4,465,952, Cl. 313-136.000.

Kobayashi, Yoshikazu: *See*—
Takagi, Toshihiko; Kobayashi, Yoshikazu; Arakawa, Yoshihide; Suzuki, Yoshiji; and Hara, Tsutomu, 4,466,091, Cl. 369-275.000.

Kobe Steel, Limited: *See*—
Sakai, Yoshiya; Nagai, Yasuhiro; Ikemoto, Kazuo; Aoki, Takakiyo; and Kanehira, Hidehiko, 4,465,921, Cl. 219-146.240.

Kober, Heinrich: *See*—
Gerum, Johannes; Nippe, Burkhard; Kober, Heinrich; and Kohler, Robert, 4,465,608, Cl. 252-62.540.

Kobzina, John W., to Chevron Research Company. Herbicidal N-haloacetyl-2-substituted-6-acylanilines. 4,465,502, Cl. 71-76.000.

Kocal, Joseph A., to UOP Inc. Hydration of olefins. 4,465,874, Cl. 568-898.000.

Koch, Jochim; and Drews, Wolfgang, to Dragerwerk Aktiengesellschaft. Oxygen insufflation device. 4,465,067, Cl. 128-207.180.

Koch, Paolo; and Santambrogio, Alberto, to Agip Petroli S.p.A. Process for producing superbasic detergents for lubricant compositions. 4,465,603, Cl. 252-33.400.

Koch, Russell W.: *See*—
Fieldhouse, John W.; Koch, Russell W.; and Oziomek, James, 4,465,535, Cl. 156-97.000.

Kodama, Eiji: *See*—
Nishikido, Joji; Kodama, Eiji; and Shibukawa, Mitsuru, 4,465,668, Cl. 424-177.000.

Koehring GmbH: *See*—
Kuhn, Hans, 4,465,145, Cl. 173-131.000.

Koenig, Leonard R.: *See*—
Degnan, Thomas F.; and Koenig, Leonard R., 4,465,884, Cl. 585-415.000.

Kofoed, Robert M., Sr. Sealing apparatus including pliable cable wrapping with upper and lower seal means. 4,465,288, Cl. 277-237.000.

Kohashi, Takahiro: *See*—
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Nonogaki, Saburo, 4,465,768, Cl. 430-296.000.

Kohler, Robert: *See*—
Gerum, Johannes; Nippe, Burkhard; Kober, Heinrich; and Kohler, Robert, 4,465,608, Cl. 252-62.540.

Kohno, Michiyuki: *See*—
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, 4,465,509, Cl. 71-119.000.

Koike, Keiichi: *See*—
Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,465,611, Cl. 252-70.000.

Kojima, Heiichiro: *See*—
Saitoh, Toshio; Wakatsuki, Susumu; Kojima, Heiichiro; and Asaka, Noboru, 4,465,271, Cl. 271-227.000.

Kojima, Noboru: *See*—
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.

Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, to Laurel Bank Machine Co., Ltd. Note transfer mechanism in automatic money depositing and disbursing machine. 4,465,193, Cl. 209-534.000.

Kolell, Norbert C.: *See*—
Smith, Roderick L.; and Kolell, Norbert C., 4,464,866, Cl. 51-165.870.

Kolibas, James A., to Nordson Corporation. Electric heater for heating high solids fluid coating materials. 4,465,922, Cl. 219-304.000.

Kolloff, Richard H., to Hewlett-Packard Company. Hydrogen, deuterium thermal conductivity detector. 4,464,925, Cl. 73-23.100.

Komatsu, Keiichi: *See*—
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.

Kompelien, Arlon D., to Honeywell, Inc. Humidity comfort offset circuit. 4,465,229, Cl. 236-44.00E.

Kondo, Kenshi, to Nihon Den-Netsu Keiki Co., Ltd. Soldering apparatus. 4,465,219, Cl. 228-37.000.

Kondo, Tadashige: *See*—
Masuda, Isao; and Kondo, Tadashige, 4,465,331, Cl. 339-14.00R.

Kongoh, Takeshi: *See*—
Makabe, Hachiro; and Kongoh, Takeshi, 4,465,003, Cl. 112-158.00E.

Konishi, Nobutake; Mori, Mutsuhiro; and Tanaka, Tomoyuki, to Hitachi, Ltd. Light-activated semiconductor device with optic fiber moveable azimuthally and transversely. 4,466,009, Cl. 357-30.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,465,766, Cl. 430-552.000.

Konno, Kazuhiko; Goh, Atsushi; Usui, Yoshihiro; and Ikeda, Kaoru, to Mitsubishi Petrochemical Co., Ltd. Herbicidal acetanilides. 4,465,507, Cl. 71-98.000.

Konosu, Makoto: *See*—
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.

Kontturi, Risto; Kahkipuro, Matti; and Saransaari, Pertti, to Elevator GmbH. Thyristor converter drive. 4,466,053, Cl. 363-129.000.

Koogle, Timothy A.: *See*—
Sabelman, Eric E.; Koogle, Timothy A.; and Kennedy, William, 4,465,478, Cl. 604-224.000.

Kopp, Walter, to Siemens Aktiengesellschaft. Device for filling toner from a container into a reservoir. 4,465,112, Cl. 141-284.000.

Kopp, Walter: *See*—
Mugrauer, Hubert; and Kopp, Walter, 4,465,357, Cl. 355-3.00R.

Koppers Company, Inc.: *See*—
Okamoto, Yoshiyuki; and Wojciechowski, Piotr S., 4,465,845, Cl. 549-30.000.

Koppers, Manfred: *See*—
Heintzmann, Peter; Koppers, Manfred; Bohnes, Karlheinz; and Domanski, Lothar, 4,465,404, Cl. 405-288.000.

Korbonits, Dezso : *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Caer nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kaszel, Ida, 4,465,855, Cl. 562-496.000.

Korea Advanced Institute of Science and Technology: *See*—
Cheigh, Hong Sik; Kim, Chul Jin; and Kim, Dong Chul, 4,465,447, Cl. 425-72.00R.

Koritsu Machine Industries Limited: *See*—
Kitano, Yoshiteru, 4,465,558, Cl. 202-262.000.

Kosanovich, George M.; and Salee, Gideon, to Occidental Chemical Corporation. Semi or fully continuous process for polyester of bisphenol and dicarboxylic acid by transesterification polymerization and product thereof. 4,465,819, Cl. 528-176.000.

Kosch, Delmar D. Welding wire dispenser. 4,465,246, Cl. 242-156.200.

Kossowsky, Ram: *See*—
Baron, Moshe I.; and Kossowsky, Ram, 4,465,337, Cl. 350-164.000.

Koyama, Kinichi, to Ogura Clutch Co., Ltd. Compact electromagnetic spring-wound clutch. 4,465,171, Cl. 192-81.00C.

Koyoshida, Shigeru: *See*—
Oyama, Shigeaki; Nakamura, Kosei; Hayashi, Yoshiyuki; and Koyoshida, Shigeru, 4,465,948, Cl. 310-62.000.

Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with azolylvinyldithioacetals. 4,465,680, Cl. 424-245.000.

Kraemer, John F., to International Minerals & Chemical Corp. Process for preparing sand cores and molds. 4,465,116, Cl. 164-527.000.

Krakowski, David: *See*—
Wendt, Alan C.; and Krakowski, David, 4,464,875, Cl. 52-481.000.

Kralowetz, Bruno. Swaging machine. 4,464,924, Cl. 72-452.000.

Kramer, Melvin G., to Brunton Company, The. Angular measurement apparatus with referencing system. 4,464,843, Cl. 33-363.00K.

Kramer, Stephen D.: *See*—
Swainson, Wyn K.; and Kramer, Stephen D., 4,466,080, Cl. 365-106.000.

Kramer, Wolfgang: *See*—
Knops, Hans-Joachim; Kramer, Wolfgang; and Frohberger, Paul-Ernst, 4,465,678, Cl. 424-244.000.
Kraus, Charles E., to Excelermatic Inc. Control arrangement for the supply of lubricant to the bearings of an infinitely variable traction roller transmission. 4,464,946, Cl. 74-200.000.
Krause, Dieter: *See*—
Baucke, Friedrich G. K.; Krause, Dieter; Metz, Bernd; Paquet, Volker; and Zauner, Johannes, 4,465,339, Cl. 350-357.000.
Krause, Hans P.: *See*—
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans P.; and Puls, Walter, 4,465,684, Cl. 424-250.000.
Krauss-Maffei Aktiengesellschaft: *See*—
Baumgartner, Siegfried; and Zaske, Erwin, 4,465,376, Cl. 366-139.000.
Krehan, Ingomar: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,465,682, Cl. 424-248.570.
Krekacs, Sandor; and Palfi, Zoltan, to Orszagos Koolaj es Gazipari Troszt. Plate floor heat exchanger. 4,465,128, Cl. 165-151.000.
Krieger, Karl; Kuschke, Gunter; and Reinelt, Werner, to Hermann Hemscheidt Maschinenfabrik GmbH & Co. Mine-roof support control mechanism. 4,465,408, Cl. 405-302.000.
Krikor, Krikor A., to GTE Automatic Electric Inc. Apparatus for CCIS data transfer between a CPU and a plurality of data terminal equipment. 4,466,062, Cl. 364-200.000.
Kriwalski, Reiner: *See*—
Geisler, Klaus; Heins, Hans-Hermann; Coulon, Helmut; and Kriwalski, Reiner, 4,465,655, Cl. 423-240.000.
Krobel, Heinz; Farber, Heinrich; and Muller, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Arrangement for projecting an identifying image on to a film. 4,465,364, Cl. 355-40.000.
Kruger, Klaus: *See*—
Waniczek, Helmut; Bartl, Herbert; and Kruger, Klaus, 4,465,028, Cl. 123-1.00A.
Krumme, Helmut: *See*—
Heinemann, Otto; Lucke, Helmut; Grothaus, Hubert; Krumme, Helmut; Linzel, Leonhard; Schossler, Werner; and Heiringhoff, Burkhard, 4,465,383, Cl. 384-100.000.
Krupick, Walter J., to Singer Company, The. Gyroscope hinge assembly with adjustable axial compliance. 4,464,942, Cl. 74-5.00F.
Krupp Polysius AG: *See*—
Heinemann, Otto; Lucke, Helmut; Grothaus, Hubert; Krumme, Helmut; Linzel, Leonhard; Schossler, Werner; and Heiringhoff, Burkhard, 4,465,383, Cl. 384-100.000.
Kryczun, Alfred; and Pufal, Rolf, to Klockner-Humboldt-Deutz AG. Lance for blow type reactor. 4,465,265, Cl. 266-226.000.
Kubota, Hazime, to Toyota Jidosha Kabushiki Kaisha. Press-fit device of a drive shaft into a differential gear of a front engine-front drive type automotive vehicle. 4,464,818, Cl. 29-252.000.
Kubota, Hiroshi: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,465,647, Cl. 264-29.600.
Kubota, Masaharu, to Fuji Jukogyo Kabushiki Kaisha. System for supplying secondary air for an internal combustion engine. 4,464,896, Cl. 60-290.000.
Kuhara, Yoshiki: *See*—
Tada, Koji; Nanba, Hirokuni; Kuhara, Yoshiki; and Tatsumi, Masayoshi, 4,465,969, Cl. 324-96.000.
Kuhn, Hans, to Koehring GmbH. Cushioned drive cap for a pile driver. 4,465,145, Cl. 173-131.000.
Kuin, Nicolaas P. J.; and Pleyers, Jozef J. A. Water-fixable electrostatic toner powder containing hydrolyzed polyvinyl ester. 4,465,754, Cl. 430-109.000.
Kuipers, Arie: *See*—
van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, 4,465,142, Cl. 172-7.000.
Kukes, Semyon J.; and Harris, Jesse R., to Phillips Petroleum Company. Removal of contaminants from organic compositions. 4,465,589, Cl. 208-208.00R.
Kukes, Simon G.; and Banks, Robert L., to Phillips Petroleum Company. Metathesis process and catalyst. 4,465,890, Cl. 585-646.000.
Kukes, Simon G.; and Banks, Robert L., to Phillips Petroleum Company. Olefin metathesis and catalyst. 4,465,891, Cl. 585-646.000.
Kullen, Wilhelm: *See*—
Bindel, Rudolf; and Kullen, Wilhelm, 4,465,287, Cl. 277-235.00B.
Kumar, Mahesh: *See*—
Huang, Ho-Chung; Kumar, Mahesh; and Sechi, Franco N., 4,465,980, Cl. 330-149.000.
Kume, Hidetoshi: *See*—
Maekawa, Tsukasa; Gondo, Takeshi; Takahashi, Shigeo; and Kume, Hidetoshi, 4,465,867, Cl. 568-652.000.
Kupper, Heinz, to Klockner-Humboldt-Deutz A.G. Injection system for injecting two fuels through one injection nozzle. 4,465,237, Cl. 239-533.300.
Kuraray Co., Ltd.: *See*—
Harano, Yoshiyuki, 4,465,873, Cl. 568-868.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,465,827, Cl. 536-18.600.
Kuroki, Takashi: *See*—
Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, 4,465,727, Cl. 428-138.000.
Kurosaki Refractories Co., Ltd.: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,465,647, Cl. 264-29.600.
Kuschke, Gunter: *See*—
Krieger, Karl; Kuschke, Gunter; and Reinelt, Werner, 4,465,408, Cl. 405-302.000.
Kuzma, Petr. Hydrophilic polymers and contact lesses therefrom. 4,465,794, Cl. 523-106.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Takizawa, Hiroshi; Morita, Osamu; Oiji, Yoshimasa; and Hashimoto, Tamotsu, 4,465,835, Cl. 546-133.000.
La Telemecanique Electrique: *See*—
Naulin, Michel; and Gendre, Michel, 4,465,909, Cl. 200-5.00R.
Laak, Rein. Sewage system for the treatment of segregated domestic waste water. 4,465,594, Cl. 210-151.000.
Labbe, Robert A. Wire straightener and method for straightening wire. 4,464,919, Cl. 72-162.000.
Laboratories Pharmedical SA: *See*—
del Valle, Margarita E., 4,465,843, Cl. 548-539.000.
Lamb, Joe H. Swimming pool cover with adjustable side gores. 4,464,801, Cl. 4-502.000.
Lambert, Michael P. Can lid with push in tear tab. 4,465,203, Cl. 220-268.000.
Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., to United States of America, Energy. Solar-powered turbocompressor heat pump system. 4,464,908, Cl. 62-235.100.
Landino, Paul J., to Zycron Systems, Inc. Motor control system. 4,465,961, Cl. 318-811.000.
Lane, Richard L., to General Signal Corporation. Method and apparatus for slicing semiconductor ingots. 4,465,550, Cl. 156-635.000.
Lang, Clifford H.; and Biss, Michael S., to United States of America, Air Force. Flexible line support assembly. 4,465,253, Cl. 248-75.000.
Lang, Clifford H., to United States of America, Air Force. Thermally isolated structural support link. 4,465,392, Cl. 403-24.000.
Lang, Gerard: *See*—
Shroot, Braham; Maignan, Jean; and Lang, Gerard, 4,465,688, Cl. 424-274.000.
Lang, Hermann; and Steinmuller, Jurgen, to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH. Rotary piston pump with pressure equalization chambers for the shaft split seals. 4,465,442, Cl. 418-2.000.
Lang, Walter; Muchel, Franz; and Blaha, Erich, to Carl-Zeiss-Stiftung. Apparatus for the subjective and objective determination of refraction. 4,465,348, Cl. 351-211.000.
Laroche, Pierre; and Toussaint, Francois, to Glaverbel. Composite mirror panels. 4,465,734, Cl. 428-317.100.
Larrauri, Jose M.; Arias, Beatriz C.; and Galiasso, Roberto E., to Intevep, S.A. Hydrotreatment catalyst. 4,465,784, Cl. 502-242.000.
Larson, Duane B., to Bethlehem Steel Corp. Adaptive control for a dividing shear. 4,464,959, Cl. 83-37.000.
Larson, Kenneth W.: *See*—
Richmond, Frank M.; Larson, Kenneth W.; and Miller, Robert A., 4,465,488, Cl. 604-414.000.
Larson, Roland E. Regular dodecahedron die with opposite faces having identical numbers of indicia. 4,465,279, Cl. 273-146.000.
Lascoux, Pierre: *See*—
Coppe, Jacques; and Lascoux, Pierre, 4,465,086, Cl. 134-122.00R.
Latsch, Reinhard: *See*—
Bamer, Franz; Breuser, Erich; and Latsch, Reinhard, 4,465,031, Cl. 123-260.000.
Lau, Kreisler S. Y.; and Boschan, Robert H., to Hughes Aircraft Company; and Hughes Aircraft Company. Process for preparing ethynylated benzoic acid derivatives. 4,465,833, Cl. 544-246.000.
Lauckhardt, Gerhard, to USM Corporation. Thermoplastic rod advance mechanism. 4,465,216, Cl. 226-158.000.
Laurel Bank Machine Co., Ltd.: *See*—
Goi, Kowichi, 4,465,925, Cl. 235-379.000.
Kokubo, Eiichi; Arikawa, Junichi; Goi, Kowichi; and Imura, Shinichi, 4,465,193, Cl. 209-534.000.
Lauterbach-Dammler, Inge: *See*—
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.
LeaRonal, Inc.: *See*—
Nobel, Fred I., 4,465,563, Cl. 204-43.00N.
Le Brasseur, Genevieve, to Societe Chimique des Charbonnages-CdF Chimie. Halogenated catalyst for ethylene polymerization containing a transition metal and magnesium and process for its preparation. 4,465,781, Cl. 502-104.000.
Ledlow, Jimmie E.; and Stoops, Paul M., to Boeing Company, The. Device for supporting weld underbed. 4,465,220, Cl. 228-50.000.
Lee, Chung J., to Plastics Engineering Company. Unsaturated polyester molding compounds with improved resistance to thermal and humid aging. 4,465,806, Cl. 525-31.000.
Lee, George S.: *See*—
Samuels, Peter B.; and Lee, George S., 4,465,071, Cl. 128-335.000.
Lefevre, Francois: *See*—
Degre, Thomas; Lefevre, Francois; and Lefevre, Xavier, 4,466,068, Cl. 364-461.000.
Lefevre, Xavier: *See*—
Degre, Thomas; Lefevre, Francois; and Lefevre, Xavier, 4,466,068, Cl. 364-461.000.
Lehmann, Clemens M.; Feiten, Erwin E.; and zur Nieden, Erich E., to Karl Rabofsky GmbH. Pleating machine. 4,465,213, Cl. 223-30.000.

Lehmann, Clemens M.: *See*—
Feiten, Erwin E.; and Lehmann, Clemens M., 4,465,214, Cl. 223-30.000.

Lehner, Daniel F.: *See*—
Bell, Ted A.; Cooksey, Timothy S.; and Lehner, Daniel F., 4,465,720, Cl. 428-85.000.

Leininger, James C., to Phillips Petroleum Company. Spun-like continuous multifilament yarn. 4,464,894, Cl. 57-288.000.

Leins, Eberhard; Walter, Manfred; and Gaiser, Willie, to Sulzer Morat GmbH. Knitting machine. 4,464,912, Cl. 66-77.000.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Feigelson, Robert S.; and Borshchevsky, Alexander, 4,465,545, Cl. 156-616.00R.

Lemonnier, Jean, to Millipore S.A. Apparatus for aseptic and antiparticulate opening of sealed glass containers. 4,465,501, Cl. 65-285.000.

Lendle, Wilhelm: *See*—
Grunbein, Wolfgang; Lendle, Wilhelm; Post, Hendrik W.; Richter, Heinz; and Rossberg, Manfred, 4,465,880, Cl. 570-258.000.

Lennox Industries, Inc.: *See*—
Pfarrer, David M., 4,465,960, Cl. 318-774.000.

Lentz, William P., to Corning Glass Works. Laminated extrusion die blade support. 4,465,652, Cl. 264-177.00R.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy A.G. Recording material for color photography. 4,465,757, Cl. 430-216.000.

Leppard, David G.; and Rody, Jean, to Ciba-Geigy A.G. Colorphotographic recording material. 4,465,765, Cl. 430-512.000.

Leroy, Claude, to Sorelec. Curved heat exchange apparatus for solar heating and air-conditioning of premises. 4,465,060, Cl. 126-443.000.

Leroy, Pierre; and Pilache, Michel, to Valeo. Friction lining suitable for use in brakes, clutches and other applications. 4,465,796, Cl. 523-153.000.

Lesher, George Y.; Opalka, Chester J., Jr.; Page, Donald F.; and McGarry, Ruthann M., to Sterling Drug Inc. 5-(Hydroxy- and/or amino-phenyl)-6-(lower-alkyl)-2-(1H)-pyridinones, their cardiotonic use and preparation. 4,465,686, Cl. 424-263.000.

L'Esperance, Paul M.: *See*—
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,465,057, Cl. 126-418.000.

L'Etat Francais: *See*—
Sabatier, Michel, 4,465,367, Cl. 356-23.000.

Leuschner, Udo; and Zinsberger, Alfons, to Bosch-Siemens Hausgerate GmbH. Electric coffee machine with centrifugal filter. 4,464,982, Cl. 99-287.000.

Lever Brothers Company: *See*—
Boskamp, Jelles V., 4,465,619, Cl. 252-540.000.
Carter, Malcolm N. A., 4,465,613, Cl. 252-174.160.

Lewis, Irwin C., to Union Carbide Corporation. Cholesteric mesophase pitch. 4,465,585, Cl. 208-22.000.

Lewis, Winsor T.; and Browning, Eric J., to Coal Industry (Patents) Limited. Rotary cutting head for mining machines with means for inducing airflow and sensing thereof. 4,465,318, Cl. 299-1.000.

Lexel Corporation: *See*—
Woste, Ludger H., 4,466,102, Cl. 372-53.000.

Leyrer, Reinhold J.; Saenger, Dietrich; and Klinsmann, Uwe, to BASF Aktiengesellschaft. Production of relief images or resist images by a negative-working method. 4,465,760, Cl. 430-325.000.

Liautaud, Jacques: *See*—
Chanas, Maryse; Liautaud, Jacques; Pla, Jean; and Shanbrom, Edward, 4,465,623, Cl. 260-112.00B.

Libertini, Zoltan L.; and Hartel, Edward O., to Avco Corporation. Air and oil cooled bearing package. 4,465,427, Cl. 415-1.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Huber, Hans P.; and Russer, Peter, 4,465,336, Cl. 350-96.300.

Lichtenberger, Horst: *See*—
Richter, Robert; Wiehn, Helmut; and Lichtenberger, Horst, 4,465,021, Cl. 122-4.00D.

Liggett, John A. Sailcraft. 4,465,008, Cl. 114-39.000.

Lijoi, Bruno: *See*—
Caserta, Anthony L.; and Lijoi, Bruno, 4,465,333, Cl. 350-96.200.

Lin, Lifun, to Olin Corporation. Apparatus for producing acicular iron or iron alloy particles. 4,465,264, Cl. 266-114.000.

Lin, Shiow-Ching, to W. R. Grace & Co. Thermosetting composition from cyanourea compound. 4,465,825, Cl. 528-367.000.

Lindberg, Donald, to Custom Home Spa, Inc. Pipe fitting and method for draining a hydrotherapy pump. 4,465,428, Cl. 415-53.00R.

Lindberg, John E., to Owen, Wickersham & Erickson. Pressure-operated flow control valve and molding method. 4,465,095, Cl. 137-614.200.

Linde Aktiengesellschaft: *See*—
Forster, Franz, 4,464,979, Cl. 91-499.000.

Lindemeyer, Carl W., to United States of America, Energy. Locking mechanism for indexing device. 4,464,948, Cl. 74-411.500.

Lindert, Andreas, to Parker Chemical Company. Stable water-borne epoxy resin. 4,465,816, Cl. 525-488.000.

Lindsley, John F., to American Cyanamid Company. Hydrotreating catalyst support having dual pore structure. 4,465,789, Cl. 502-255.000.

Lingelbach, Everett C. Slide board exercise apparatus. 4,465,275, Cl. 272-134.000.

Linhart, Friedrich; Hartmann, Juergen; Jung, Dietmar; Hartmann, Heinrich; and Spoor, Herbert, to BASF Aktiengesellschaft. Water-soluble polymers of di-C_1-C_3-alkylaminoneopentyl (meth)acrylates, and their use as retention agents, drainage agents and flocculants in papermaking. 4,465,555, Cl. 162-168.200.

Linne, Robert S.: *See*—
Smith, Michael C.; and Linne, Robert S., 4,465,120, Cl. 164-482.000.

Linzel, Leonhard: *See*—
Heinemann, Otto; Lucke, Helmut; Grothaus, Hubert; Krumme, Helmut; Linzel, Leonhard; Schossler, Werner; and Heiringhoff, Burkhard, 4,465,383, Cl. 384-100.000.

Lion Corporation: *See*—
Sato, Hiroshi; Watanabe, Haruo; and Suganuma, Nobuo, 4,465,662, Cl. 424-54.000.

Liptay-Wagner, Nicholas: *See*—
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,465,374, Cl. 356-375.000.

Litzberg, Lennert K., to Skandinavisk Installationssamordning AB (SISAM AB). Method of recovering thermal energy by heat pump from sea water and comparable water masses. 4,464,909, Cl. 62-260.000.

Liu, Peter D., to D/Punch Co. Two-sided use of floppy disks. 4,466,024, Cl. 360-60.000.

Livingstone, Jeanne. Garment having concealed pouch. 4,464,798, Cl. 2-247.000.

Lock, Michele R.; and Frisch, Kurt C., Jr., to Dow Chemical Company, The. Urethane coatings from aliphatic aromatic diisocyanates. 4,465,713, Cl. 427-385.500.

Lockard, Joseph L., to AMP Incorporated. Light display assembly. 4,466,050, Cl. 362-307.000.

Locke, Frank W.: *See*—
Hood, Paul F.; and Locke, Frank W., 4,465,227, Cl. 229-36.000.

Loesch, Robert P., to AT&T Technologies, Inc. Methods of and apparatus for transferring retractile cords. 4,464,879, Cl. 53-428.000.

Loh, Koon W.; and Emtage, Peter R., to Westinghouse Electric Corp. Magnetostatic wave device. 4,465,986, Cl. 333-148.000.

Lohraff, Larry G.: *See*—
Myers, Lawrence R.; Gaiser, Robert F.; Lohraff, Larry G.; and Bach, Lloyd G., 4,464,899, Cl. 60-547.100.

Long, Clarence S., Jr., to AMP Incorporated. Apparatus for orienting articles. 4,465,176, Cl. 198-400.000.

Long, James F.; and Budnik, Brian J., to Motorola, Inc. Controlled ferroresonant voltage regulator providing immunity from sustained oscillations. 4,465,966, Cl. 323-248.000.

Long, Richard W.; and Stinton, Robert T., to Diving Unlimited International, Inc. Easy access underwater diving suit. 4,464,795, Cl. 2-2.10R.

Long, Robert A.: *See*—
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,464,817, Cl. 29-33.00M.

Lopata, Frances G.; and Urs, Venkataramaraj S., to Olin Corporation. Bullet lubricant and method of coating bullets with said lubricant to reduce the leading effect thereof on the bores of firearms. 4,465,883, Cl. 585-9.000.

Lopez de Romana, Eduardo A., to Discovision Associates. Erroneous pulse sequence detector. 4,465,977, Cl. 328-120.000.

Loram Maintenance of Way, Inc.: *See*—
Nameny, Frank J., 4,464,995, Cl. 104-9.000.

Lord, Henry A.: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 4,465,225, Cl. 229-2.5EC.

Lossel, Walter; and Schmidhuber, Klaus, to Siemens Aktiengesellschaft. DC shunt traction motor drive supplied from an energy accumulator. 4,465,955, Cl. 318-139.000.

Louis, Dubertret: *See*—
Bisagni, Emile; Morin, Jacqueline; Averbeck, Dietrich; and Louis, Dubertret, 4,465,691, Cl. 424-256.000.

Loutfy, Raouf O.; and Withers, James C., to Atlantic Richfield Company. Method of producing anhydrous aluminum chloride from acid leach-derived ACH and the production of aluminum therefrom. 4,465,566, Cl. 204-67.000.

Loutfy, Raouf O.: *See*—
Cambridge, Edward L.; Loutfy, Raouf O.; and Withers, James C., 4,465,659, Cl. 423-495.000.

Love, Robert B.; and Choudary, Uppala V., to Atlantic Richfield Company. Method for forming photovoltaic cells employing multinary semiconductor films. 4,465,575, Cl. 204-192.00S.

Loveday, Thomas L.: *See*—
Marquez, Vincent F., Jr.; Payne, R. Edward; Loveday, Thomas L.; and Gunn, Robert J., 4,465,139, Cl. 166-373.000.

Lovegrove, Peter C., to United Kingdom Atomic Energy Authority. Electrophoretic separator. 4,465,583, Cl. 204-299.00R.

Lo Vullo, Ferdinando; Malvezzi, Emanuele; and Balboni, Primo, to Montedison S.p.A. Method and device for protecting the anodes of electrolytic cells against overloads, short circuits and unbalances. 4,465,560, Cl. 204-1.00R.

Lowell, Jack L.: *See*—
Darlington, Roy K.; Henry, George, Jr.; and Lowell, Jack L., 4,465,598, Cl. 210-721.000.

LSI Logic Corporation: *See*—
Yin, Patrick, 4,465,945, Cl. 307-473.000.

Lucas Industries Limited: *See*—
Anderson, Robert A., 4,465,164, Cl. 188-73.440.
Hill, William F., 4,466,002, Cl. 340-870.310.

Lucas Meyer GmbH: *See*—
Strauss, Kuno; and Nasner, Alice, 4,465,693, Cl. 424-365.000.

Lucke, Helmut: *See—*
Heinemann, Otto; Lucke, Helmut; Grothaus, Hubert; Krumme, Helmut; Linzel, Leonhard; Schossler, Werner; and Heiringhoff, Burkhard, 4,465,383, Cl. 384-100.000.

Ludman, Jacques E.: *See—*
Horner, Joseph L.; and Ludman, Jacques E., 4,465,332, Cl. 350-96.190.

Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,465,689, Cl. 424-283.000.

Lukas, Bohumir; Wiesendanger, Walter; and Schmidt-Ruppin, Karl H., to Ciba-Geigy Corporation. New pharmaceutical preparations. 4,465,666, Cl. 424-145.000.

Luks, Charles J. Bar stock puller. 4,464,958, Cl. 82-2.500.

Lundberg, Robert D.: *See—*
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., 4,465,801, Cl. 524-389.000.

Lutz, Walter: *See—*
Wingen, Rainer; Horn, Klaus; and Lutz, Walter, 4,465,758, Cl. 430-288.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Mendle, Hans; Bandel, Rudolf; and Bozung, Hanns-Gunther, 4,464,902, Cl. 60-612.000.

M.A.N. Maschinenfabrik Augsburg-Nurnsberg Aktiengesellschaft: *See—*
Mundorff, Frank, 4,465,515, Cl. 75-243.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Petersen, Godber, 4,465,269, Cl. 270-47.000.

Mac Engineering & Equipment Co., Inc.: *See—*
Tole, James M.; and Stauffer, Ned L., 4,464,961, Cl. 83-346.000.

Mac Valves, Inc.: *See—*
Neff, James A., 4,465,100, Cl. 137-625.640.

Machida, Hajime: *See—*
Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, 4,466,004, Cl. 346-74.400.

Mack, Robert; and Buschulte, Winfried, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Process for the operation of an absorption heat pump capable of bivalent operation and absorption heat pump for implementing this process. 4,464,907, Cl. 62-101.000.

Mack Trucks, Inc.: *See—*
Pelizzoni, Winton J., 4,465,040, Cl. 123-188.0GC.

Maehara, Naoyoshi; and Uno, Takashi, to Matsushita Electric Industrial Co., Ltd. Liquid atomizer including vibrator. 4,465,234, Cl. 239-102.000.

Maekawa, Tsukasa; Gondo, Takeshi; Takahashi, Shigeo; and Kume, Hidetoshi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing o-methallyloxyphenol. 4,465,867, Cl. 568-652.000.

Maekawa, Tsukasa; Gondo, Takeshi; and Hayase, Syozo, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing o-methallyloxyphenol. 4,465,868, Cl. 568-652.000.

Mag-Dynamics, Inc.: *See—*
Inhofer, Harold, 4,465,089, Cl. 137-101.000.

Maggi, Joseph A.: *See—*
Wilensky, Barry F.; and Maggi, Joseph A., 4,466,014, Cl. 358-10.000.

Magla Products, Inc.: *See—*
Mattesky, Henry, 4,464,853, Cl. 38-138.000.

Magnavox Consumer Electronics Company: *See—*
Streeter, Robert D., 4,466,116, Cl. 381-15.000.

Magnetfabrik Bonn GmbH Vormals Gewerkschaft Windhorst: *See—*
Adolph, Kurt; and Grimbach, Winfried, 4,465,906, Cl. 179-115.5SF.

Magnetic Peripherals Inc.: *See—*
Newberry, Alfred L., 4,466,034, Cl. 360-106.000.

Magyar Vagon es Gepgyar: *See—*
Tar, Lorant, 4,464,953, Cl. 74-710.500.

Maida, Osamu: *See—*
Saegusa, Takashi; and Maida, Osamu, 4,465,369, Cl. 356-222.000.

Maignan, Jean: *See—*
Shroot, Braham; Maignan, Jean; and Lang, Gerard, 4,465,688, Cl. 424-274.000.

Makabe, Hachiro; and Kongoh, Takeshi, to Janome Sewing Machine Co., Ltd. Electronic sewing machine with vocal instrumentalities. 4,465,003, Cl. 112-158.00E.

Makino, Hisao; and Oshima, Tsuginori, to Bridgestone Tire Company, Limited. Method of and apparatus for feeding rubbery strip to tire-building drum. 4,465,536, Cl. 156-133.000.

Malec, Jerry P., to Allied Oil & Supply, Inc. Tire monitor. 4,465,013, Cl. 116-34.00R.

Maleri, Enso J.: *See—*
Boyan, Gerard E.; and Maleri, Enso J., 4,466,073, Cl. 364-559.000.

Malpass, Donald F., Jr.: *See—*
Zimmer, Mark F.; Smith, William E.; and Malpass, Donald F., Jr., 4,465,786, Cl. 502-169.000.

Malvezzi, Emanuele: *See—*
Lo Vullo, Ferdinando; Malvezzi, Emanuele; and Balboni, Primo, 4,465,560, Cl. 204-1.00R.

Manabe, Katsuhide; Sato, Yutaka; and Muroi, Ryoichi, to Toyoda Gosei Co., Ltd. Process for the pretreatment of a polyolefin product before coating. 4,465,715, Cl. 427-444.000.

Manabe, Takaki: *See—*
Yamazaki, Shinichiro; Manabe, Takaki; and Kato, Toranosuke, 4,465,158, Cl. 180-271.000.

Mandet, Gerard M. F.; and Marchi, Marc R., to S.N.E.C.M.A. System for mounting and attaching turbine and compressor prismatic rooted blades and mounting process. 4,465,432, Cl. 416-215.000.

Manduley, Flavio M.: *See—*
Daniels, Edward P.; Dlugos, Daniel F.; and Manduley, Flavio M., 4,466,079, Cl. 364-900.000.

Mango, Frank D.: *See—*
Brownscombe, Thomas F.; and Mango, Frank D., 4,465,797, Cl. 523-216.000.

Manly, W. Judson, Jr. Yarn processing machine and creel assembly. 4,464,891, Cl. 57-90.000.

Mannesmann Aktiengesellschaft: *See—*
Walzel, Leopold, 4,466,104, Cl. 373-78.000.

Manning, Patrick R.; and West, Donald W., to Medtest Corporation. Method for cell sampling in a body cavity. 4,465,078, Cl. 128-759.000.

Manoly, Arthur E., to Hughes Aircraft Company. Ring-bar slow wave structure and fabrication method. 4,465,987, Cl. 333-156.000.

Mansuripur, Masud: *See—*
Connell, G. A. Neville; and Mansuripur, Masud, 4,466,035, Cl. 360-114.000.

Marchi, Marc R.: *See—*
Mandet, Gerard M. F.; and Marchi, Marc R., 4,465,432, Cl. 416-215.000.

Marchisio, Aldo, to Valeo SA. Clutch mechanism for two-plate clutches suitable for automotive vehicles. 4,465,170, Cl. 192-48.700.

Mardorf, Robert; and Hesserg, Sigfried, to Intermedicat GmbH. Injector for medical uses having an improved automatic switch-off system. 4,465,474, Cl. 604-154.000.

Mardorf, Robert; and Hessberg, Sigfried, to Intermedicat GmbH. Injector for medical uses. 4,465,475, Cl. 604-155.000.

Marquez, Vincent F., Jr.; Payne, R. Edward; Loveday, Thomas L.; and Gunn, Robert J., to Baker Oil Tools, Inc. Valve and sensing device for well conduits. 4,465,139, Cl. 166-373.000.

Marshall Richards Barcro Limited: *See—*
Pamplin, John W.; Astbury, Brian R.; Shillito, Richard; and Hancock, James J., 4,464,922, Cl. 72-286.000.

Marten, Eric: *See—*
Gebhardt, Ronald E.; Haldeman, Richard C.; and Marten, Eric, 4,464,877, Cl. 52-745.000.

Martin, Alain J., to U.S. Philips Corporation. Multiprocessor computer system for executing a splittable algorithm, notably a recursive algorithm. 4,466,064, Cl. 364-200.000.

Martin, Donald R., to McGraw-Edison Company. Self-generating gas flow interrupter. 4,465,910, Cl. 200-148.00R.

Martin, Harry F.; and Schlatter, Martin E., to Westinghouse Electric Corp. Steam turbine with superheated blade disc cavities. 4,465,429, Cl. 415-116.000.

Martin, Jack. Expandable towel rack. 4,465,198, Cl. 211-105.300.

Martin, Klaus; Jurgens, Gunter; and Gaus, Hermann, to Daimler-Benz Aktiengesellschaft. Control arrangement for an automatic change-speed transmission series-connected with output of driving engine. 4,464,955, Cl. 74-867.000.

Martini, Alfred R. G., to Tenneco Inc. Connection flange for tubular members. 4,465,308, Cl. 285-177.000.

Masaki, Hisaji: *See—*
Takahashi, Yuji; Masaki, Hisaji; and Suzuki, Yasuhito, 4,466,006, Cl. 346-153.100.

Masamoto, Kiyouji: *See—*
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.

Mason, Charles G., to Republic Steel Corporation. Ingot mold shields. 4,465,117, Cl. 164-137.000.

Masonite Corporation: *See—*
Eaton, James W., 4,464,872, Cl. 52-276.000.

Masuda, Fumio: *See—*
Domen, Toshinori; and Masuda, Fumio, 4,465,173, Cl. 194-100.00A.

Masuda, Isao; and Kondo, Tadashige, to Kioritz Corporation. Device for preventing radio frequency interference from spark plug. 4,465,331, Cl. 339-14.00R.

Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,466,081, Cl. 365-218.000.

Masuzawa, Osamu, to Nisshin Oil Mills, Limited, The. Food extruder. 4,465,452, Cl. 425-308.000.

Mataga, Sinichiro; and Takenaka, Makoto, to Tokuyama Soda Kabushiki Kaisha. Bipolar electrolytic cell. 4,465,579, Cl. 204-255.000.

Mathner, Manfred: *See—*
Thomsen, Peter; and Mathner, Manfred, 4,465,440, Cl. 417-500.000.

Matsuda, Yukio: *See—*
Sunano, Katsuaki; and Matsuda, Yukio, 4,465,795, Cl. 523-122.000.

Matsufuji, Akihiro: *See—*
Miyatuka, Hajime; Kasuga, Akira; Matsufaji, Akihiro; and Sugisaki, Tsutomu, 4,465,737, Cl. 428-339.000.

Matsumoto, Atsuo, to Sumitomo Electric Industries, Ltd. Floating disk brake. 4,465,163, Cl. 188-73.390.

Matsumoto, Seishi, to Kabushiki Kaisha Ishida Koki Seisakusho. Device for charging weighed out articles into container in automatic weighing apparatus. 4,465,150, Cl. 177-25.000.

Matsumoto, Yukio. Reinforced crankcase for an internal combustion engine with a balancer shaft. 4,465,029, Cl. 123-195.00A.

Matsumura, Shigeo: *See—*
Nogami, Ikuo; Shirafuji, Hideo; and Matsumura, Shigeo, 4,465,771, Cl. 435-68.000.

Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, to Kao Corporation. Hair setting composition. 4,465,664, Cl. 424-71.000.
Matsuoka, Hideoki: *See*—
Miki, Hiroyuki; and Matsuoka, Hideoki, 4,465,302, Cl. 280-804.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, 4,465,936, Cl. 250-484.100.
Ishihara, Takeshi; and Kagawa, Keiichi, 4,465,705, Cl. 427-38.000.
Ishikawa, Katsuhiko; Kawasaki, Yoshitaka; and Yotsuya, Motoo, 4,465,457, Cl. 431-201.000.
Kawamura, Akihisa; Mikami, Noboru; and Yukiyoshi, Atsushi, 4,465,160, Cl. 181-192.000.
Maehara, Naoyoshi; and Uno, Takashi, 4,465,234, Cl. 239-102.000.
Mori, Keiichi; Inoue, Shojiro; and Takada, Manabu, 4,465,228, Cl. 236-20.00A.
Nishino, Atsushi; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,465,458, Cl. 431-208.000.
Matsushita Electric Works, Ltd.: *See*—
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.
Matsuura, Toshio; Suwa, Kyoichi; Shimizu, Hisayuki; and Tanimoto, Akikazu, to Nippon Kogaku K.K. Exposure apparatus for production of integrated circuit. 4,465,368, Cl. 356-218.000.
Mattesky, Henry, to Magla Products, Inc. Ventilated ironing board. 4,464,853, Cl. 38-138.000.
Matthews, William D.: *See*—
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McVie, James, to Dow Corning Limited. Siloxane-polyester compositions and use thereof. 4,465,712, Cl. 427-387.000.
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Meader, Maurice D.: *See*—
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Skarstad, Paul M.; and Hayes, Thomas G., 4,465,743, Cl. 429-105.000.
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Meinert, Harry M.; and Sundberg, John D., to Deere & Company. Shank clamp. 4,465,396, Cl. 403-395.000.
Meisch, Charles E., to C. R. Bard, Inc. Air vent splash guard for drip chamber. 4,465,479, Cl. 604-251.000.
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Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,465,850, Cl. 560-053.000.
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Milligan, Thomas A., to United States of America, Air Force. Hardwire missile receiver coupler. 4,465,985, Cl. 333-116.000.
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Mischakoff, Matthew. Guitar bridge system. 4,464,970, Cl. 84-298.000.
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Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, to Hitachi, Ltd. Record/reproduce circuit for VTR. 4,466,026, Cl. 360-61.000.
Miura, Kunihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Image density detecting device for image forming apparatus. 4,465,358, Cl. 355-3.00R.
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Miyatuka, Hajime; Kasuga, Akira; Matsufuji, Akihiro; and Sugisaki, Tsutomu, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,465,737, Cl. 428-339.000.
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Modrovich, Ivan E. Stabilized enzymic solutions for determining urea. 4,465,770, Cl. 435-12.000.
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Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; and Zamboino, Michael J., to International Flavors & Fragrances Inc. Mixtures of acrolein derivatives and substituted lactones. 4,465,695, Cl. 426-3.000.
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Moriguchi, Kisoo; and Fukawa, Isaburo, to Asahi Kasei Kogyo Kabushiki Kaisha. Linear medium- or low-density polyethylene composition. 4,465,812, Cl. 525-333.800.
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Morini, Marco. Carburetor for spark-ignition internal combustion engines. 4,465,641, Cl. 261-41.00C.
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Morozumi, Takuro; Nakamura, Mitsuo; Ohgami, Masaaki; and Kataoka, Ryuji, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system. 4,465,048, Cl. 123-440.000.
Morris, John F.; and Worrell, Robert V., to Smith International, Inc. Eccentric counterbore for diamond insert stud. 4,465,148, Cl. 175-329.000.
Morrison, Terry; and Meador, Jay D., to Chandler Evans Inc. Gas turbine engine starting technique and control. 4,464,895, Cl. 60-39.141.
Morrow, Duane F., to Mead Johnson & Company. Anti-psychotic agents. 4,465,683, Cl. 424-250.000.
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Moshe, Dolev; and Avraham, Bahry. Padlock. 4,464,915, Cl. 70-52.000.
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Speil, Walter, 4,465,038, Cl. 123-90.550.
Motorola, Inc.: *See*—
Countryman, Roger S., Jr., 4,465,973, Cl. 324-158.00R.
Dressler, Roger W., 4,466,118, Cl. 381-102.000.
Long, James F.; and Budnik, Brian J., 4,465,966, Cl. 323-248.000.
Moore, Morris A.; and Braun, William V., 4,466,001, Cl. 340-825.080.
Skutta, Frank R., 4,466,129, Cl. 455-219.000.
Swartz, Craig C., 4,465,075, Cl. 128-672.000.
Motsinger, Donald L.; and Brown, Daniel G., to PPG Industries, Inc. Method for sizing glass fibers. 4,465,500, Cl. 65-3.430.
Moulinex, Societe Anonyme: *See*—
Weiss, Roger, 4,464,807, Cl. 15-119.00A.
MTS Systems Corporation: *See*—
Watts, David E.; and Winters, Robert W., 4,464,937, Cl. 73-772.000.
MTU Motoren- und Turbinen-Union Muenchen GmbH: *See*—
Bischoff, Hans, 4,465,433, Cl. 416-223.00A.
Muchel, Franz: *See*—
Lang, Walter; Muchel, Franz; and Blaha, Erich, 4,465,348, Cl. 351-211.000.
Mues, Volker: *See*—
Forster, Heinz; Mues, Volker; Baasner, Bernd; Hagemann, Hermann; Eue, Ludwig; and Schmidt, Robert, 4,465,504, Cl. 71-88.000.
Mughal, Ahmed S., to John Wyeth & Brother Limited. Oxaprozin calcium salt. 4,465,838, Cl. 548-236.000.
Mugrauer, Hubert; and Kopp, Walter, to Siemens Aktiengesellschaft. Drive system for a photocopier. 4,465,357, Cl. 355-3.00R.
Muhlenbeck, Josef: *See*—
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.
Mulera, Terrence A.: *See*—
Perez-Mendez, Victor; and Mulera, Terrence A., 4,465,933, Cl. 250-385.000.
Mullenberg, Ralph. Polygon connection of a hub with a shaft. 4,465,395, Cl. 403-356.000.
Muller, Jurgen: *See*—
Krobel, Heinz; Farber, Heinrich; and Muller, Jurgen, 4,465,364, Cl. 355-40.000.
Munch, Joseph, to Thomson-CSF. Device for rotating an anti-diffusing screen in a Rontgen tomograph. 4,466,114, Cl. 378-155.000.
Mundorff, Frank, to M.A.N. Maschinenfabrik Augsburg-Nurnsberg Aktiengesellschaft. Piston ring for internal combustion engine. 4,465,515, Cl. 75-243.000.
Munt, Hartwig, to Siemens Aktiengesellschaft. Gas discharge surge voltage arrester and production method. 4,466,043, Cl. 361-120.000.
Murakami, Hiroyasu; Hiramatsu, Akira; and Katsuma, Makoto, to Canon Kabushiki Kaisha. Single-lens reflex camera. 4,465,355, Cl. 354-475.000.
Murakami, Takeru: *See*—
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; and Tendo, Atsushi, to Nippon Chemiphar Co., Ltd. Guanidinocyclohexanecarboxylic acid derivatives. 4,465,851, Cl. 560-125.000.
Muraoka, Takao, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic disc apparatus. 4,466,031, Cl. 360-97.000.
Murata, Masanori; and Takada, Yutaka, to Nissan Motor Company, Limited. Structure for fitting a tank for an automotive vehicle. 4,465,254, Cl. 248-311.200.
Murata, Mitsuhiro; and Tsunesumi, Tomoko, to Citizen Watch Co., Ltd. Electronic timepiece. 4,465,380, Cl. 368-202.000.
Murata, Yasuhiko: *See*—
Aoyagi, Yukio; Ichiyama, Shuichi; and Murata, Yasuhiko, 4,464,898, Cl. 60-436.000.
Murayama, Ken: *See*—
Tanaka, Masakazu; and Murayama, Ken, 4,465,480, Cl. 604-264.000.
Murillo, Hernando. Wheeled support device for disabled vehicle tire. 4,465,421, Cl. 414-430.000.
Muroi, Ryoichi: *See*—
Manabe, Katsuhide; Sato, Yutaka; and Muroi, Ryoichi, 4,465,715, Cl. 427-444.000.
Musgrave, Daniel D. Magazine filling device. 4,464,855, Cl. 42-87.000.
Musto, Richard L.; and Kai, Norichika, to Combustion Engineering, Inc. Direct pulverized fuel fired system. 4,464,999, Cl. 110-106.000.
Myers, Lawrence R.; Gaiser, Robert F.; Lohraff, Larry G.; and Bach, Lloyd G., to Bendix Corporation, The. Brake booster. 4,464,899, Cl. 60-547.100.
Myhre, Ragnvald. Adjustable miter guide device. 4,464,962, Cl. 83-425.000.
Nagai, Yasuhiro: *See*—
Sakai, Yoshiya; Nagai, Yasuhiro; Ikemoto, Kazuo; Aoki, Takakiyo; and Kanehira, Hidehiko, 4,465,921, Cl. 219-146.240.
Nagasaka, Chuji: *See*—
Eguchi, Yasukata; Hanyu, Susumu; and Nagasaka, Chuji, 4,465,005, Cl. 112-270.000.

Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, to NGK Spark Plug Co., Ltd. Gold-plated electronic components. 4,465,742, Cl. 428-621.000.
Nagl, Martin, to Voest-Alpine Aktiengesellschaft. Vibrating conveyor for delivering a stream of green pellets of even thickness. 4,465,592, Cl. 209-236.000.
Naito, Sachio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,465,664, Cl. 424-71.000.
Naito, Shun-ichi: *See*—
Kawano, Hisao; Naito, Shun-ichi; and Shibata, Yuji, 4,466,095, Cl. 370-63.000.
Nakagome, Hideki; and Hashimoto, Takasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic refrigerator. 4,464,903, Cl. 62-3.000.
Nakahata, Kimio, to Canon Kabushiki Kaisha. Portable electrophotographic copying apparatus. 4,465,359, Cl. 355-3.00R.
Nakai, Akira: *See*—
Toyoda, Hiroaki; Kinbara, Minoru; and Nakai, Akira, 4,465,285, Cl. 277-25.000.
Nakajima, Tadanobu: *See*—
Kajita, Hiroshi; Iseki, Masahide; Nakajima, Tadanobu; and Kawamori, Yoshizo, 4,465,272, Cl. 271-246.000.
Nakamura, Hideki; Ishida, Toshinobu; and Yoshida, Takao, to Terumo Kabushiki Kaisha. Container for medical use. 4,465,487, Cl. 604-405.000.
Nakamura, Kosei: *See*—
Oyama, Shigeaki; Nakamura, Kosei; Hayashi, Yoshiyuki; and Koyoshida, Shigeru, 4,465,948, Cl. 310-62.000.
Nakamura, Kotaro: *See*—
Ishikawa, Takatoshi; Nakamura, Takashi; and Nakamura, Kotaro, 4,465,762, Cl. 430-376.000.
Nakamura, Mitsuo: *See*—
Morozumi, Takuro; Nakamura, Mitsuo; Ohgami, Masaaki; and Kataoka, Ryuji, 4,465,048, Cl. 123-440.000.
Nakamura, Norihiko; Katou, Takashi; Itoh, Takaaki; and Morino, Toshiharu, to Toyota Jidosha Kabushiki Kaisha; and Aisan Industry Co., Ltd. Variable venturi-type carburetor. 4,465,642, Cl. 261-44.00C.
Nakamura, Norihiko: *See*—
Sato, Yasuyuki; Nakamura, Norihiko; and Kobayashi, Tatsuo, 4,465,952, Cl. 313-136.000.
Nakamura, Sukenori; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,466,007, Cl. 346-200.000.
Nakamura, Takashi: *See*—
Ishikawa, Takatoshi; Nakamura, Takashi; and Nakamura, Kotaro, 4,465,762, Cl. 430-376.000.
Nakane, Hisashi: *See*—
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,465,553, Cl. 156-643.000.
Nakanishi, Eiji: *See*—
Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamanaka, Shigeru, 4,465,631, Cl. 260-239.100.
Nakanishi Metal Works Co., Ltd.: *See*—
Wakabayashi, Takao, 4,464,998, Cl. 105-148.000.
Nakano, Rieko: *See*—
Suzuki, Takashi; Hashimoto, Shoichiro; Orisaku, Masami; and Nakano, Rieko, 4,465,872, Cl. 568-803.000.
Nakashima, Seiichiro: *See*—
Inaba, Hajimu; Nakashima, Seiichiro; Inagaki, Shigemi; and Ito, Susumu, 4,465,424, Cl. 414-589.000.
Nakayama, Yasuharu, to Kansai Paint Co., Ltd. Aqueous emulsion composition. 4,465,803, Cl. 524-460.000.
Nalbach, John C., to John R. Nalbach Engineering Co., Inc. Container filling apparatus having magnet and vibrator connected thereto. 4,465,111, Cl. 141-79.000.
Nameny, Frank J., to Loram Maintenance of Way, Inc. Method and apparatus for removing railway ties. 4,464,995, Cl. 104-9.000.
Namiki, Junji, to Nippon Electric Co., Ltd. Cross-polarization crosstalk elimination circuit. 4,466,132, Cl. 455-295.000.
Nanba, Hirokuni: *See*—
Tada, Koji; Nanba, Hirokuni; Kuhara, Yoshiki; and Tatsumi, Masayoshi, 4,465,969, Cl. 324-96.000.
Nancarrow, James H.: *See*—
Kobayashi, Robert J.; Nancarrow, James H.; and Alger, Jeffrey L., 4,464,901, Cl. 60-606.000.
Nanya, Takasori; Hashimoto, Eigo; and Nishimura, Katsuo, to Citizen Watch Co., Ltd. All solid state complementary electrochromic display devices. 4,465,341, Cl. 350-357.000.
Nasner, Alice: *See*—
Strauss, Kuno; and Nasner, Alice, 4,465,693, Cl. 424-365.000.
Nation, Melvin S., to International Jensen Incorporated. Loudspeaker assembly. 4,465,905, Cl. 179-115.5PC.
National Research Development Corporation: *See*—
Brook, Richard J.; and Wu, Suxing, 4,465,778, Cl. 501-104.000.
Sale, Frank R.; and Yorucu, Huseyin, 4,465,511, Cl. 75-0.50B.
Natoli, Gaetano A.: *See*—
Brice, Michael F.; and Natoli, Gaetano A., 4,465,697, Cl. 426-79.000.
Naulin, Michel; and Gendre, Michel, to La Telemecanique Electrique. Switching device and its use in a selector switch or a program control apparatus. 4,465,909, Cl. 200-5.00R.
Nava, Pier L. Device to secure a throatband on helmets and similar headgear. 4,464,799, Cl. 2-421.000.
NCR Corporation: *See*—
Dickman, John E.; Turi, Raymond A.; and Topich, James A., 4,464,824, Cl. 29-576.00E.
Girard, Donald J.; O'Dell, Robert R.; Chanasyk, Albert J.; and Belknap, William M., 4,466,058, Cl. 364-200.000.
Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek: *See*—
ter Meulen, Berend P., 4,465,402, Cl. 405-264.000.
Neff, James A., to Mac Valves, Inc. Four-way stacking valve with common electrical conduit and individual body mounted exhaust flow controls. 4,465,100, Cl. 137-625.640.
Negishi, Akira; and Nozaki, Ken, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industries. Method for surface treatment of carbon catalyst. 4,465,576, Cl. 204-192.00E.
Nelson, Bailey. Communication device for handicapped persons. 4,465,465, Cl. 434-112.000.
Nelson, Jordan R.; Wissing, William K.; and Dunn, Victor S., to RCA Corporation. Formulation of electrically coaductive plastics. 4,465,616, Cl. 252-511.000.
Nelson Research & Development Company: *See*—
Horn, Alan S., 4,465,692, Cl. 424-330.000.
Nemit, Paul, Jr.; and Pillis, Joseph W., to Frick Company. Radial and thrust bearing mountings providing independent loading. 4,465,446, Cl. 418-201.000.
Nemoto, Masami: *See*—
Ichiryu, Ken; Watanabe, Haruo; and Nemoto, Masami, 4,464,978, Cl. 91-459.000.
Nermes, Esko O.; and Talonen, Timo T., to Outokumpu Oy. Procedure for producing lead bullion from sulphide concentrate. 4,465,512, Cl. 75-10.00R.
Netherlands Postal & Telecommunications Services: *See*—
Damen, Jozef T. W.; and Tan, Hong S., 4,466,121, Cl. 382-9.000.
Neumann, Peter; Etzbach, Karl-Heinz; Eilingsfeld, Heinz; and Hoffmann, Gerhard, to BASF Aktiengesellschaft. Phenylhydrazones. 4,465,857, Cl. 564-251.000.
New England Nuclear Corporation: *See*—
Hochberg, Richard B., 4,465,676, Cl. 424-238.000.
Newberry, Alfred L., to Magnetic Peripherals Inc. Carriage assembly. 4,466,034, Cl. 360-106.000.
Newbold, Larry E. Toy parachute and release mechanism. 4,465,251, Cl. 244-155.00R.
Newland, David E. Measuring thickness. 4,464,840, Cl. 33-147.00E.
Ng, Yee S.: *See*—
May, John W.; and Ng, Yee S., 4,465,749, Cl. 430-54.000.
NGK Insulators, Ltd.: *See*—
Mitsumatsu, Yoshio; and Seike, Shoji, 4,465,900, Cl. 174-209.000.
NGK Spark Plug Co., Ltd.: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,465,742, Cl. 428-621.000.
Nguyen, Dinh L.: *See*—
Fiaux, Andre ; and Nguyen, Dinh L., 4,465,722, Cl. 528-88.000.
Nguyen, Thinh; Fresnel, Jean-Marie; and Beer, Henri B., to Diamond Shamrock Chemicals Company. Electroplating film-forming metals in non-aqueous electrolyte. 4,465,561, Cl. 204-58.500.
NHK Spring Co., Ltd.: *See*—
Senaha, Susumu; Chiba, Tetsuya; Ohno, Akira; and Katayama, Shitomi, 4,465,711, Cl. 427-379.000.
Nicholson, Michael P.: *See*—
Miller, Richard F.; and Nicholson, Michael P., 4,465,881, Cl. 585-2.000.
Miller, Richard F.; and Nicholson, Michael P., 4,465,882, Cl. 585-4.000.
Nickson Industries, Inc.: *See*—
Donovan, Edmund D., Jr.; and Florian, Roy S., 4,465,252, Cl. 248-60.000.
Nicolozakes, Basil J.; Sanders, John M.; Chiangi, Daniel P.; and Pacula, Chris M., to UNC Navel Products, Naval Products Div. Method of reducing microfissuring in welds having an austenitic stainless steel alloy base metal. 4,465,224, Cl. 228-222.000.
Niekamp, Carl W.: *See*—
Seidman, Martin; and Niekamp, Carl W., 4,465,521, Cl. 127-36.000.
Nielinger, Werner; Alewelt, Wolfgang; and Hermann, Karl H., to Bayer Aktiengesellschaft. Process for the continuous production of polyamides. 4,465,821, Cl. 528-335.000.
Nielsen, Kurt F.: *See*—
Jensen, Niels; D.; and Nielsen, Kurt F., 4,465,437, Cl. 417-366.000.
Nielsen, Steven D.; and Willshaw, Peter, to University of Utah. Cardiac flow measurement system and method. 4,465,063, Cl. 128-1.00D.
Nihon Den-Netsu Keiki Co., Ltd.: *See*—
Kondo, Kenshi, 4,465,219, Cl. 228-37.000.
Nihon Plast Co., Ltd.: *See*—
Yoshida, Hideo, 4,464,980, Cl. 92-34.000.
Nikkel, Ronnie D.; and L'Esperance, Paul M., to Phillips Petroleum Company. Collector means for solar energy collecting system. 4,465,057, Cl. 126-418.000.
Nilsson, Sten E.: *See*—
Sarsten, Rolf B.; and Nilsson, Sten E., 4,465,123, Cl. 165-16.000.
Nimke, Helmut E.; and Thomas, William R., to UMAC, Inc.; and Brooklyn Union Gas Company, a part interest. Connecting or repair device. 4,465,309, Cl. 285-373.000.
Nippe, Burkhard: *See*—
Gerum, Johannes; Nippe, Burkhard; Kober, Heinrich; and Kohler, Robert, 4,465,608, Cl. 252-62.540.
Nippon Chemiphar Co., Ltd.: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; and Tendo, Atsushi, 4,465,851, Cl. 560-125.000.

Nippon Columbia Kabushiki Kaisha: *See*—
Takagi, Toshihiko; Kobayashi, Yoshikazu; Arakawa, Yoshihide; Suzuki, Yoshiji; and Hara, Tsutomu, 4,466,091, Cl. 369-275.000.
Nippon Electric Co., Ltd.: *See*—
Namiki, Junji, 4,466,132, Cl. 455-295.000.
Nippon Kogaku K.K.: *See*—
Matsuura, Toshio; Suwa, Kyoichi; Shimizu, Hisayuki; and Tanimoto, Akikazu, 4,465,368, Cl. 356-218.000.
Saegusa, Takashi; and Maida, Osamu, 4,465,369, Cl. 356-222.000.
Nippon Soken, Inc.: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,465,047, Cl. 123-425.000.
Nippon Steel Corporation: *See*—
Iuchi, Tohru; Watanabe, Kunitoshi; Shibata, Toshihiko; and Kawamura, Tetsuro, 4,465,382, Cl. 374-9.000.
Kiriyama, Takashi; and Yamaguchi, Chiyomi, 4,465,648, Cl. 264-30.000.
Ohya, Mutsumi, 4,465,122, Cl. 164-491.000.
Yoshimura, Hirofumi; Ishii, Mitsuo; Sawatani, Tadashi; and Minamino, Shigeru, 4,465,525, Cl. 148-37.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Tokunaga, Michio; Kitano, Junjiro; Sagawa, Akio; Hayashi, Toshio; and Hamazato, Kazuo, 4,465,967, Cl. 323-285.000.
Nippondenso Co., Ltd.: *See*—
Sato, Yasuyuki; Nakamura, Norihiko; and Kobayashi, Tatsuo, 4,465,952, Cl. 313-136.000.
Nishihara, Koji: *See*—
Hashimoto, Takeshi; Akashi, Terumasa; and Nishihara, Koji, 4,465,878, Cl. 568-730.000.
Nishihara, Toshio; Shingu, Tadashi; and Suzuki, Nobuo, to Teijin Limited. Selectively light transmitting film and preformed laminar structure. 4,465,736, Cl. 428-332.000.
Nishikido, Joji; Kodama, Eiji; and Shibukawa, Mitsuru, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for improving intestinal absorption of cephalosporin derivatives. 4,465,668, Cl. 424-177.000.
Nishimura, Katsuo: *See*—
Nanya, Takanori; Hashimoto, Eigo; and Nishimura, Katsuo, 4,465,341, Cl. 350-357.000.
Nishimura, Minoru: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
Nishimura, Tadashi: *See*—
Arima, Hideaki; Nishimura, Tadashi; Yoneda, Masahiro; Fukumoto, Takaaki; and Hirata, Yoshihiro, 4,465,529, Cl. 148-188.000.
Nishino, Atsushi; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Apparatus for burning liquid fuel equipped with heating-type fuel vaporizer. 4,465,458, Cl. 431-208.000.
Nishio, Ken-ichi: *See*—
Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,465,741, Cl. 428-614.000.
Nishioka, Jim Z. Archery bow with flexible force transmitting link assembly. 4,465,054, Cl. 124-24.00R.
Nishizawa, Jun-ichi. Method for producing a group IIB–VIB compound semiconductor crystal. 4,465,527, Cl. 148-171.000.
Nissan Motor Company, Limited: *See*—
Chikaraishi, Takayo; and Itoh, Hiroshi, 4,464,863, Cl. 49-213.000.
Fujioka, Kazuyoshi, 4,465,167, Cl. 192-3.570.
Hayashi, Yoshimasa, 4,465,041, Cl. 123-195.00R.
Miki, Hiroyuki; and Matsuoka, Hideoki, 4,465,302, Cl. 280-804.000.
Miki, Hiroyuki; and Okuyama, Hiroo, 4,465,303, Cl. 280-804.000.
Murata, Masanori; and Takada, Yutaka, 4,465,254, Cl. 248-311.200.
Tsutsumi, Saburo, 4,465,034, Cl. 123-306.000.
Uchiyama, Toshihiko; Yoshida, Eizo ; and Okuyama, Toshiki, 4,465,710, Cl. 264-46.500.
Yamane, Ken, 4,464,897, Cl. 60-313.000.
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Nisshin Oil Mills, Limited, The: *See*—
Masuzawa, Osamu, 4,465,452, Cl. 425-308.000.
Nitschko, Theodor: *See*—
Spitaler, Englebert; Oberleitner, Gerhard; and Nitschko, Theodor, 4,465,294, Cl. 280-612.000.
NL Industries, Inc.: *See*—
Darlington, Roy K.; Henry, George, Jr.; and Lowell, Jack L., 4,465,598, Cl. 210-721.000.
Nobel, Fred I., to LeaRonal, Inc. Electrodeposition of palladium-silver alloys. 4,465,563, Cl. 204-43.00N.
Nobuhara, Masahiro; Yamaguchi, Kiyoshi; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Method for purifying interferon. 4,465,622, Cl. 260-112.00R.
Noe, Andreas: *See*—
Noe, Oskar; Noe, Andreas; Noe, Rolf; and Berger, Heinz W., 4,464,805, Cl. 15-102.000.
Noe, Manfred: *See*—
Ebert, Heinrich; Noe, Manfred; Wind, Kurt; and Bitsch, Gunter, 4,464,850, Cl. 36-44.000.
Noe, Oskar; Noe, Andreas; Noe, Rolf; and Berger, Heinz W., to BWG Bergwerk- Und Walzwerk-Maschinenbau GmbH. Strip pickling apparatus with straight-through strip travel. 4,464,805, Cl. 15-102.000.
Noe, Rolf: *See*—
Noe, Oskar; Noe, Andreas; Noe, Rolf; and Berger, Heinz W., 4,464,805, Cl. 15-102.000.
Noel, David A.: *See*—
Armor, Anthony F.; Shartrand, Allan C.; Noel, David A.; and Rominger, Kathryn M., 4,465,947, Cl. 310-59.000.
Nogami, Ikuo; Shirafuji, Hideo; and Matsumura, Shigeo, to Takeda Chemical Industries, Ltd. Production of enduracidin and microorganisms therefor. 4,465,771, Cl. 435-68.000.
Noguchi, Masahiro: *See*—
Enjo, Naonori; Aomi, Hideki; and Noguchi, Masahiro, 4,465,610, Cl. 252-67.000.
Noguchi, Takashi: *See*—
Soneda, Mitsuo; Noguchi, Takashi; and Ohtsu, Takaji, 4,466,018, Cl. 358-213.000.
Nomura, Ken: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Nomura, Yukihiro: *See*—
Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, 4,465,936, Cl. 250-484.100.
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Nonogaki, Saburo: *See*—
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Nonogaki, Saburo, 4,465,768, Cl. 430-296.000.
Nordson Corporation: *See*—
Boone, Jacob J., 4,465,212, Cl. 222-504.000.
Kolibas, James A., 4,465,922, Cl. 219-304.000.
Noritsu Kenkyu Center Co., Ltd.: *See*—
Toyoda, Seiichi, 4,465,365, Cl. 355-45.000.
North American Philips Corporation: *See*—
Fitzpatrick, Brian J.; and McGee, Thomas F., III, 4,465,546, Cl. 156-616.00A.
North Wind Power Company, Inc.: *See*—
Coleman, Clint, 4,465,537, Cl. 156-154.000.
Northern Telecom Limited: *See*—
Hogeboom, John G., 4,465,983, Cl. 331-111.000.
McNicol, John D., 4,466,134, Cl. 455-311.000.
Tihanyi, George; and Karwowski, Zbigniew T., 4,465,328, Cl. 312-215.000.
Norton, Larry A., to Starline Products, Inc. Suspension for ring drive silo unloader. 4,465,418, Cl. 414-313.000.
Norwich Shoe Co., Inc.: *See*—
Aldridge, John E., 4,465,448, Cl. 425-119.000.
Nose, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Control signal-multiplexing circuit. 4,466,097, Cl. 370-112.000.
Novation, Inc.: *See*—
Serrano, Arthur L., 4,466,106, Cl. 375-9.000.
Nozaki, Ken: *See*—
Negishi, Akira; and Nozaki, Ken, 4,465,576, Cl. 204-192.00E.
NP Marketing Corporation: *See*—
Petren, Rolf A. M., 4,465,413, Cl. 410-94.000.
NSK Warner K.K.: *See*—
Saikai, Toshihiro, 4,465,245, Cl. 242-107.40D.
N.V. Optische Industrie "De Oude Delft": *See*—
Burgemeister, Eduard A., 4,465,932, Cl. 250-370.000.
O&K Orenstein & Koppel Aktiengesellschaft: *See*—
Schwappach, Dieter, 4,465,425, Cl. 414-685.000.
Oakwood Energy Group, Inc.: *See*—
Iseard, Barry S., 4,465,963, Cl. 320-46.000.
Oba, Hideaki; and Umehara, Masaakira, to Ricoh Company, Ltd. Optical information recording medium. 4,465,767, Cl. 430-271.000.
Obara, Haruki, to Fujitsu Fanuc Limited. Wire-cut, electric discharge machining method for automatically measuring a required offset value. 4,465,914, Cl. 219-69.00W.
Obergfell, Walter: *See*—
Maurer, Roland; Wolber, Robert; Obergfell, Walter; and Flaig, Hans, 4,465,378, Cl. 368-88.000.
Oberleitner, Gerhard: *See*—
Spitaler, Englebert; Oberleitner, Gerhard; and Nitschko, Theodor, 4,465,294, Cl. 280-612.000.
Occelli, Mario L.; and Kennedy, James V., to Gulf Research & Development Company. Process for cracking high metals content feedstock. 4,465,588, Cl. 208-120.000.
Occelli, Mario L.; and Kennedy, James V., to Gulf Research & Development Company. Modified cracking catalyst composition. 4,465,779, Cl. 502-63.000.
Occidental Chemical Corporation: *See*—
Kosanovich, George M.; and Salee, Gideon, 4,465,819, Cl. 528-176.000.
Ocone, Luke R., to Pennwalt Corporation. Use of pyroelectric and photovoltaic polyvinylidene fluoride to enchance the photosensitivity of silver halide emulsions and the products made thereby. 4,465,764, Cl. 430-496.000.
O'Connell, Patrick A., to Xerox Corporation. Integrated imaging bar. 4,466,020, Cl. 358-293.000.
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, to Asahi Glass Company Ltd. Process for producing hydrogen. 4,465,570, Cl. 204-129.000.
O'Dell, Robert R.: *See*—
Girard, Donald J.; O'Dell, Robert R.; Chanasyk, Albert J.; and Belknap, William M., 4,466,058, Cl. 364-200.000.

Oe, Takanori; Tsuruda, Mineo; Goto, Kazuhiro; and Hisadome, Masao, to Yoshitomi Pharmaceutical Industries Ltd. Bis-(aminoalkoxy)-phenyl, pyridyl ketones, and use as immunological agents. 4,465,681, Cl. 424-248.400.
Oellerer, Friedrich: *See*—
Theurer, Josef; Brunninger, Manfred; and Oellerer, Friedrich, 4,465,414, Cl. 414-21.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, to Canon Kabushiki Kaisha. Photoconductive member with a -Si having two layer regions. 4,465,750, Cl. 430-57.000.
Ogura Clutch Co., Ltd.: *See*—
Koyama, Kinichi, 4,465,171, Cl. 192-81.00C.
O'Hare, Harry M. Method and apparatus for the purification of water. 4,465,573, Cl. 204-180.00P.
Ohashi, Michihiro: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for processing paper sheets. 4,465,192, Cl. 209-534.000.
Ohgami, Masaaki: *See*—
Morozumi, Takuro; Nakamura, Mitsuo; Ohgami, Masaaki; and Kataoka, Ryuji, 4,465,048, Cl. 123-440.000.
Ohgishi, Tsutomu; and Sakurai, Tadashi, to Sanyo Electric Co., Ltd. Entry apparatus of digital value in memory. 4,466,127, Cl. 455-182.000.
Ohkubo, Toshimi, to Ricoh Company, Ltd. Thermal duplicating apparatus. 4,465,931, Cl. 250-317.100.
Ohno, Akira: *See*—
Senaha, Susumu; Chiba, Tetsuya; Ohno, Akira; and Katayama, Shitomi, 4,465,711, Cl. 427-379.000.
Ohno, John M., to General Electric Company. Process for preparing nitrided superhard composite materials. 4,465,650, Cl. 264-60.000.
Ohta, Kazutoshi; and Ohtomi, Sadayuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator winding device. 4,465,161, Cl. 187-20.000.
Ohtomi, Sadayuki: *See*—
Ohta, Kazutoshi; and Ohtomi, Sadayuki, 4,465,161, Cl. 187-20.000.
Ohtomo, Fumio: *See*—
Tamaki, Hiroshi; Ohtomo, Fumio; and Kimura, Kazuaki, 4,465,373, Cl. 356-374.000.
Ohtsu, Takaji: *See*—
Soneda, Mitsuo; Noguchi, Takashi; and Ohtsu, Takaji, 4,466,018, Cl. 358-213.000.
Ohya, Mutsumi, to Nippon Steel Corporation. Method for reducing mold width during continuous casting. 4,465,122, Cl. 164-491.000.
Oiji, Yoshimasa: *See*—
Takizawa, Hiroshi; Morita, Osamu; Oiji, Yoshimasa; and Hashimoto, Tamotsu, 4,465,835, Cl. 546-133.000.
Okada, Hozuma, to Sakashita Co., Ltd. Leather-like textile material. 4,465,730, Cl. 428-246.000.
Okada, Yuzo, to Ajinomoto Company, Incorporated. Dipeptide sweetening composition. 4,465,694, Cl. 426-3.000.
Okamoto, Yoshiyuki; and Wojciechowski, Piotr S., to Koppers Company, Inc. High pressure synthesis of sulfur-selenium fulvalenes. 4,465,845, Cl. 549-30.000.
Oki Electric Industry Co., Ltd.: *See*—
Shin, Yasuhiro, 4,465,944, Cl. 307-473.000.
Oki, Toshinori: *See*—
Onishi, Yoji; and Oki, Toshinori, 4,465,157, Cl. 180-228.000.
Okumura, Takeo: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,465,664, Cl. 424-71.000.
Okuyama, Hiroo: *See*—
Miki, Hiroyuki; and Okuyama, Hiroo, 4,465,303, Cl. 280-804.000.
Okuyama, Toshiki: *See*—
Uchiyama, Toshihiko; Yoshida, Eizo ; and Okuyama, Toshiki, 4,465,710, Cl. 264-46.500.
Olah, George A. Oxidative condensation of natural gas or methane into gasoline range hydrocarbons. 4,465,893, Cl. 585-709.000.
Olin Corporation: *See*—
Dotson, Ronald L.; Miles, Ronald C.; and Carpenter, Larry D., 4,465,568, Cl. 204-98.000.
Lin, Lifun, 4,465,264, Cl. 266-114.000.
Lopata, Frances G.; and Urs, Venkataramaraj S., 4,465,883, Cl. 585-9.000.
Olszewski, Daniel P. Fishing lure and method of fabrication. 4,464,857, Cl. 43-42.330.
Olympus Optical Co., Ltd.: *See*—
Kato, Masahiko; and Kano, Tokio, 4,465,938, Cl. 250-576.000.
Kato, Toshikazu, 4,466,030, Cl. 360-96.500.
Omron Tateisi Electronics Co.: *See*—
Kanayama, Kenzi, 4,466,125, Cl. 455-56.000.
On, Harry P., Jr., to Union Oil Company of California. Stabilization of hydrocarbon oil. 4,465,606, Cl. 252-56.00R.
Onishi, Yasunobu: *See*—
Sugiuchi, Masami; Miyamura, Masataka; and Onishi, Yasunobu, 4,465,752, Cl. 430-75.000.
Onishi, Yoji; and Oki, Toshinori, to Kawasaki Jukogyo Kabushiki Kaisha. Engine mounting device for motorcycle. 4,465,157, Cl. 180-228.000.
Ono, Nobutaka: *See*—
Itoh, Takeji; and Ono, Nobutaka, 4,464,846, Cl. 34-58.000.
Ono, Saichi: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,465,827, Cl. 536-18.600.
Ono, Tsuyoshi; and Oono, Fumiaki, to Victor Company of Japan, Ltd. Apparatus for playing record discs in an automatic mode and an automatic music piece selection mode. 4,466,086, Cl. 369-32.000.
Onodera, Takehiko, to Kabushiki Kaisha Bandai; and Sanimu Co., Ltd. Launching apparatus for resilient drive mobile toy. 4,464,860, Cl. 446-491.000.
Onoye, Hideo, to Victor Company of Japan, Ltd. System for storing and reading out musical tone signals. 4,464,968, Cl. 84-1.280.
Oono, Fumiaki: *See*—
Ono, Tsuyoshi; and Oono, Fumiaki, 4,466,086, Cl. 369-32.000.
Ootsuka, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Switch operating apparatus for a movable electric device. 4,465,911, Cl. 200-331.000.
Ootsuka, Yoshinori: *See*—
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,465,047, Cl. 123-425.000.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; Page, Donald F.; and McGarry, Ruthann M., 4,465,686, Cl. 424-263.000.
Orcutt, John W.; and Hardin, Richard M., to Texas Instruments Incorporated. Carrier for integrated circuit. 4,465,898, Cl. 174-52.0FP.
Oriental Photo Industries Co., Ltd.: *See*—
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, 4,465,761, Cl. 430-341.000.
Orisaku, Masami: *See*—
Suzuki, Takashi; Hashimoto, Shoichiro; Orisaku, Masami; and Nakano, Rieko, 4,465,872, Cl. 568-803.000.
Orszagos Koolaj es Gazipari Troszt: *See*—
Krekacs, Sandor; and Palfi, Zoltan, 4,465,128, Cl. 165-151.000.
Osabe, Akira: *See*—
Yoshida, Shigeru; Osabe, Akira; and Hoashi, Takayuki, 4,466,037, Cl. 360-133.000.
Osaka Bobbin Kabushiki Kaisha: *See*—
Itoh, Takeji; and Ono, Nobutaka, 4,464,846, Cl. 34-58.000.
Osaka, Yoshiaki: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,465,827, Cl. 536-18.600.
Osato, Yoichi: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,465,750, Cl. 430-57.000.
Oshima, Tsuginori: *See*—
Araki, Yusuke; and Oshima, Tsuginori, 4,465,531, Cl. 156-64.000.
Makino, Hisao; and Oshima, Tsuginori, 4,465,536, Cl. 156-133.000.
Osrodek Badawczo-Rozwojowy Stosowania i Obrobki Tworzyw Sztucznych Proplast: *See*—
Platkiewicz, Leonard; Debski, Wlodzimierz; and Głowacki, Jerzy, 4,465,799, Cl. 523-457.000.
Osta, Francesco; and Cattane, Giuseppe. Device for spreading a substance onto a moving web of material. 4,465,015, Cl. 118-222.000.
Ota, Yoshihiko, to Victor Company of Japan, Ltd. Color video signal reproducing apparatus which transforms the recorded signal of one signal format into signals of another format upon reproduction. 4,466,022, Cl. 358-330.000.
Otis Engineering Corporation: *See*—
Carroll, Albert W.; and Pearce, Joseph L., 4,465,132, Cl. 166-156.000.
Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See*—
Maekawa, Tsukasa; Gondo, Takeshi; Takahashi, Shigeo; and Kume, Hidetoshi, 4,465,867, Cl. 568-652.000.
Maekawa, Tsukasa; Gondo, Takeshi; and Hayase, Syozo, 4,465,868, Cl. 568-652.000.
Ottersbach, Jens: *See*—
Saumweber, Eckart; Beckmann, Heinrich; and Ottersbach, Jens, 4,466,066, Cl. 364-426.000.
Otto, Josef: *See*—
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.
Outlaw, Joyce, to J J Enterprises Inc., International. Methods and apparatus for drying fingernails. 4,464,906, Cl. 62-93.000.
Outokumpu Oy: *See*—
Nermes, Esko O.; and Talonen, Timo T., 4,465,512, Cl. 75-10.00R.
Over, William R.: *See*—
Johnson, Keith, Jr.; Long, Robert A.; and Over, William R., 4,464,817, Cl. 29-33.00M.
Owen, Wickersham & Erickson: *See*—
Lindberg, John E., 4,465,095, Cl. 137-614.200.
Owens, Arthur H.: *See*—
McCay, Johnny A.; Owens, Arthur H.; and Jackson, Fred N., 4,464,841, Cl. 33-174.00R.
Owens-Illinois, Inc.: *See*—
Caldwell, David L., 4,465,175, Cl. 198-399.000.
Franks, Nelson, 4,464,884, Cl. 53-557.000.
Oyama, Shigeaki; Nakamura, Kosei; Hayashi, Yoshiyuki; and Koyoshida, Shigeru, to Fujitsu Fanuc Limited. Device for cooling a reversible motor. 4,465,948, Cl. 310-62.000.
Oyster Tent Company: *See*—
Ferguson, Robert W., 4,465,087, Cl. 135-101.000.
Oziomek, James: *See*—
Fieldhouse, John W.; Koch, Russell W.; and Oziomek, James, 4,465,535, Cl. 156-97.000.
Paccar Inc.: *See*—
Stone, Thomas R.; and Penzotti, Roger P., 4,465,299, Cl. 280-714.000.

Pacula, Chris M.: *See—*
Nicolozakes, Basil J.; Sanders, John M.; Chiangi, Daniel P.; and Pacula, Chris M., 4,465,224, Cl. 228-222.000.

Page, Donald F.: *See—*
Lesher, George Y.; Opalka, Chester J., Jr.; Page, Donald F.; and McGarry, Ruthann M., 4,465,686, Cl. 424-263.000.

Pagliaro, Fulvio A.; Franklin, James G.; and Gasser, Rupert J., to Societe d'Assistance Technique pour Produits Nestle S.A. Decaffeination process. 4,465,699, Cl. 426-428.000.

Pako Corporation: *See—*
Kaufmann, Kenneth M., 4,466,072, Cl. 364-502.000.

Palacio, Joaquin J.; and Cristobal, Carlos C., to Gang-Nail Systems, Inc. Truss assembly and attachment member for use with trusses. 4,464,885, Cl. 52-693.000.

Palfi, Zoltan: *See—*
Krekacs, Sandor; and Palfi, Zoltan, 4,465,128, Cl. 165-151.000.

Pall Corporation: *See—*
Cooper, Roydon B., 4,465,595, Cl. 210-238.000.

Pallini, Luciano: *See—*
Chiuoli, Gian P.; Pallini, Luciano; and Salerno, Giuseppe, 4,465,634, Cl. 260-413.000.

Palomera, Louis M. Hammerhead. 4,465,115, Cl. 145-30.00A.

Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the preparation of arylacetic acid derivatives. 4,465,855, Cl. 562-496.000.

Pamplin, John W.; Astbury, Brian R.; Shillito, Richard; and Hancock, James J., to Marshall Richards Barcro Limited. Wire drawing method and apparatus. 4,464,922, Cl. 72-286.000.

Pannwitz, Hans U. Flexible spring bearing. 4,465,385, Cl. 384-138.000.

Paquet, Volker: *See—*
Baucke, Friedrich G. K.; Krause, Dieter; Metz, Bernd; Paquet, Volker; and Zauner, Johannes, 4,465,339, Cl. 350-357.000.

Parker Chemical Company: *See—*
Lindert, Andreas, 4,465,816, Cl. 525-488.000.

Parkin, Robert L. Dry wall building panel repair device. 4,464,869, Cl. 52-173.00R.

Parry, David R.: *See—*
Barton, John E. D.; Collins, David J.; Cox, John M.; Griffin, David A.; Parry, David R.; and Cartwright, David, 4,465,508, Cl. 71-103.000.

Parson, Mark E.; and Parson, Rodney L. Material handling apparatus. 4,465,314, Cl. 294-81.00R.

Parson, Rodney L.: *See—*
Parson, Mark E.; and Parson, Rodney L., 4,465,314, Cl. 294-81.00R.

Parsons, Ian W.: *See—*
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,465,814, Cl. 525-439.000.

Paspek, Stephen C., Jr., to Standard Oil Company, The. Oligomerization of olefins in supercritical water. 4,465,888, Cl. 585-520.000.

Pastor, Antonio C.: *See—*
Pastor, Ricardo C.; Pastor, Antonio C.; Gorre, Luisa E.; and Chew, Remedios K., 4,465,656, Cl. 423-339.000.

Pastor, Ricardo C.; Pastor, Antonio C.; Gorre, Luisa E.; and Chew, Remedios K., to Hughes Aircraft Company. Process for preparation of water-free oxide material. 4,465,656, Cl. 423-339.000.

Pastorius, Walter J.: *See—*
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 4,465,374, Cl. 356-375.000.

Pasztor, Andrew J., Jr., to Dow Chemical Company, The. Composition and method for servicing wellbores. 4,465,601, Cl. 252-8.55R.

Patalong, Hubert, to Siemens Aktiengesellschaft. Thyristor with enhancement and depletion mode FET control for improved switch behavior and method of using same. 4,466,010, Cl. 357-38.000.

Pate, John G.: *See—*
Gottsegen, Ronald B.; and Pate, John G., 4,465,904, Cl. 179-5.00R.

Patel, Jhina; and Van Sweringen, James P. Filter for hot air nozzle. 4,465,238, Cl. 239-590.300.

Paterson, John G.: *See—*
Meech, John A.; and Paterson, John G., 4,465,510, Cl. 75-3.000.

Paul, John R., to Morse-Starrett Products Company. Impact-type wire rope cutter with fragment guard. 4,464,963, Cl. 83-546.000.

Payne, R. Edward: *See—*
Marquez, Vincent F., Jr.; Payne, R. Edward; Loveday, Thomas L.; and Gunn, Robert J., 4,465,139, Cl. 166-373.000.

Payne, Thomas R., to General Electric Company. Protective control arrangement for duty cycle controlled sheathed heating elements. 4,465,924, Cl. 219-492.000.

Pearce, Joseph L.: *See—*
Carroll, Albert W.; and Pearce, Joseph L., 4,465,132, Cl. 166-156.000.

Pedain, Josef: *See—*
Wellner, Wolfgang; Pedain, Josef; and Gruber, Hermann, 4,465,826, Cl. 528-374.000.

Pedrazzi, Reinhard, to Sandoz Ltd. Sulfo group-free disazo, trisazo and tetrakisazo compounds containing at lease one basic or cationic group. 4,465,627, Cl. 260-153.000.

Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., to Exxon Research & Engineering Co. Interfacial viscosification of aqueous system utilizing sulfonated ionomers. 4,465,801, Cl. 524-389.000.

Pelizzoni, Winton J., to Mack Trucks, Inc. Valve guide insert. 4,465,040, Cl. 123-188.0GC.

Penco, Sergio: *See—*
Angelucci, Francesco; Penco, Sergio; and Arcamone, Federico, 4,465,671, Cl. 424-180.000.

Pennwalt Corporation: *See—*
King, James P., 4,465,604, Cl. 252-37.200.
Ocone, Luke R., 4,465,764, Cl. 430-496.000.

Penzhorn, Ralf-Dieter: *See—*
Dittrich, Hans; Frey, Hartmut; and Penzhorn, Ralf-Dieter, 4,464,905, Cl. 62-55.500.

Penzotti, Roger P.: *See—*
Stone, Thomas R.; and Penzotti, Roger P., 4,465,299, Cl. 280-714.000.

Percarpio, Edward P., to Becton, Dickinson and Company. Low contamination closure for blood collection tubes. 4,465,200, Cl. 215-247.000.

Perez-Mendez, Victor; and Mulera, Terrence A., to United States of America, Energy. Wire chamber radiation detector with discharge control. 4,465,933, Cl. 250-385.000.

Perkin Elmer Corporation, The: *See—*
Boyan, Gerard E.; and Maleri, Enso J., 4,466,073, Cl. 364-559.000.
Burkhalter, David W.; and Kain, Maurits R., 4,465,416, Cl. 414-217.000.
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,465,759, Cl. 430-321.000.

Perlman, Stuart S.: *See—*
Wargo, Robert A.; and Perlman, Stuart S., 4,466,015, Cl. 358-27.000.

Pernick, Benjamin J., to Grumman Aerospace Corporation. Optical flaw detection method and apparatus. 4,465,371, Cl. 356-237.000.

Perry, Loren R.: *See—*
Glonek, Robert L.; Kantor, Paul; and Perry, Loren R., 4,464,802, Cl. 4-506.000.

Peters, Hartmut; and Yilmaz, Hulusi, to E. C. H. Will (GmbH & Co.). Method and apparatus for introducing stacks of sheets into prefabricated cartons or the like. 4,464,880, Cl. 53-493.000.

Peters, Richard W.; and Dippel, Martin, to Industrial Research Products, Inc. Audio loudness control system. 4,466,119, Cl. 381-108.000.

Petersen, Dirk: *See—*
Brauer, Rudiger; and Petersen, Dirk, 4,465,438, Cl. 417-386.000.

Petersen, Godber, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing substrate handling, particularly sheet folding apparatus. 4,465,269, Cl. 270-47.000.

Peterson, Donald L.; and Welker, William V., Jr., to United States of America, Agriculture. Chemical applicator. 4,464,862, Cl. 47-1.500.

Petren, Rolf A. M., to NP Marketing Corporation. Cargo retainer. 4,465,413, Cl. 410-94.000.

Petro, John S., IV, to FMC Corporation. Sequentially pulsed spraying system. 4,465,714, Cl. 427-424.000.

Petrolite Corporation: *See—*
Thompson, Neil E. S., 4,465,620, Cl. 252-545.000.

Pfarrer, David M., to Lennox Industries, Inc. Starting arrangement for two-speed single-phase refrigerant compressor motor. 4,465,960, Cl. 318-774.000.

Pfeifer, Josef: *See—*
Berger, Joseph; Pfeifer, Josef; and Reinehr, Dieter, 4,465,823, Cl. 528-345.000.

Pfeifer, Peter, to Dr. Ing. Geislinger & Co., Schwingungstechnik Gesellschaft mbH. Method of assembling vibration-damping, torsionally elastic connectors. 4,464,822, Cl. 29-436.000.

Pfeiffer, James B.: *See—*
Herman, Stewart T.; Pfeiffer, James B.; Sewald, Richard T., Sr.; and Sterner, Charles J., 4,465,597, Cl. 210-713.000.

Pfizer Inc.: *See—*
Bright, Gene M.; and Hauske, James R., 4,465,674, Cl. 424-180.000.
Sklavounos, Constantine, 4,465,626, Cl. 260-112.50R.

Phifer, Jerry A.: *See—*
McNab, William S.; and Phifer, Jerry A., 4,465,293, Cl. 280-474.000.

Phillips Petroleum Company: *See—*
Dix, James S., 4,465,808, Cl. 525-170.000.
Drake, Charles A.; and Turk, Stanley D., 4,465,824, Cl. 528-347.000.
Kukes, Semyon J.; and Harris, Jesse R., 4,465,589, Cl. 208-208.00R.
Kukes, Simon G.; and Banks, Robert L., 4,465,890, Cl. 585-646.000.
Kukes, Simon G.; and Banks, Robert L., 4,465,891, Cl. 585-646.000.
Leininger, James C., 4,464,894, Cl. 57-288.000.
Nikkel, Ronnie D.; and L'Esperance, Paul M., 4,465,057, Cl. 126-418.000.
Smith, Richard L., 4,465,809, Cl. 525-284.000.
Turk, Stanley D.; and Drake, Charles A., 4,465,822, Cl. 528-342.000.

Phulpin, Francois J.: *See—*
Segarra, Gerard; and Phulpin, Francois J., 4,466,063, Cl. 364-200.000.

Pieper, Gunter: *See—*
Herold, Wolf-Dietrich; Gasser, Oswald; and Pieper, Gunter, 4,464,941, Cl. 73-864.130.

Pike, Winthrop S., to RCA Corporation. Adaptive control signal filter for audio signal expander. 4,465,981, Cl. 330-281.000.

Pilache, Michel: *See—*
Leroy, Pierre; and Pilache, Michel, 4,465,796, Cl. 523-153.000.

Pilat, John F.: *See—*
Houseman, David L.; Jones, Thomas M.; Richmond, Michael S.; and Pilat, John F., 4,466,057, Cl. 364-200.000.

Pilette, Deborah L.; and Romund, Paula D. Maze type game board with alternately colored spaces. 4,465,283, Cl. 273-249.000.

Pillis, Joseph W.: *See*—
Nemit, Paul, Jr.; and Pillis, Joseph W., 4,465,446, Cl. 418-201.000.
Pine, Lloyd A., to Exxon Research & Engineering Co. Phosphorus-containing catalyst. 4,465,780, Cl. 502-68.000.
Pinza, Mario: *See*—
Bellani, Piero; Bolis, Goffredo; Broccali, Giampietro; Giani, Roberto; and Pinza, Mario, 4,465,831, Cl. 544-26.000.
Pioneer Electronic Corporation: *See*—
Ayukawa, Yukitada, 4,466,028, Cl. 360-71.000.
Pitney Bowes Inc.: *See*—
Daniels, Edward P.; Dlugos, Daniel F.; and Manduley, Flavio M., 4,466,079, Cl. 364-900.000.
Pla, Jean: *See*—
Chanas, Maryse; Liautaud, Jacques; Pla, Jean; and Shanbrom, Edward, 4,465,623, Cl. 260-112.00B.
Plastics Engineering Company: *See*—
Lee, Chung J., 4,465,806, Cl. 525-31.000.
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Pneutek, Inc.: *See*—
Haytayan, Harry M., 4,464,821, Cl. 29-432.000.
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Faure, Michel; and Poinssot, Jean-Louis, 4,465,325, Cl. 308-5.00R.
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Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,465,009, Cl. 114-56.000.
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Pond, David M.; and Glenn, Thomas J., to Eastman Kodak Company. Preparation of ethyl acetate. 4,465,854, Cl. 560-265.000.
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Motsinger, Donald L.; and Brown, Daniel G., 4,465,500, Cl. 65-3.430.
Prange, Charles J., to Sewer Rodding Equipment Co. Sewer rod turning machine safety device. 4,464,806, Cl. 15-104.3SN.
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Goda, Wilfried, 4,464,974, Cl. 89-41.00L.
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Allenbaugh, George G., Jr., 4,465,235, Cl. 239-107.000.
Pretty Products, Inc.: *See*—
Bell, Ted A.; Cooksey, Timothy S.; and Lehner, Daniel F., 4,465,720, Cl. 428-85.000.
Price, Alistair J., to General Electric Company, p.l.c., The. Radio receiver apparatus including multipath fade compensating arrangement. 4,466,133, Cl. 455-303.000.
Pritchard, Dalton H., to RCA Corporation. Television signal filtering system. 4,466,016, Cl. 358-31.000.
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Rau, Allen H.; and Speckman, Donald T., 4,465,828, Cl. 536-18.600.
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Turner, Robert L.; and Prusak, John J., 4,465,453, Cl. 425-384.000.
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Kryczun, Alfred; and Pufal, Rolf, 4,465,265, Cl. 266-226.000.
Puls, Walter: *See*—
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Putzar, Roland, to Ciba-Geigy Corporation. Process for the preparation of concentrated aqueous formulations of synthetic anionic dispersants and the use thereof. 4,465,492, Cl. 8-589.000.
PVI Industries Incorporated: *See*—
Adams, Charles L., 4,465,024, Cl. 122-17.000.
Quayle, William H., to American Cyanamid Company. Hydrotreating catalyst. 4,465,790, Cl. 502-309.000.
Queen's University at Kingston: *See*—
Meech, John A.; and Paterson, John G., 4,465,510, Cl. 75-3.000.
R. P. Cargille Laboratories, Inc.: *See*—
Sacher, Robert, 4,465,621, Cl. 252-582.000.
Raidel, John E., Sr. U-Joint mount and lateral guide for air spring suspension. 4,465,298, Cl. 280-711.000.
Raidel, John E., Sr. Vehicle suspension for rough terrain. 4,465,300, Cl. 280-725.000.
Ramberg, Fred G.: *See*—
Ewing, James H.; and Ramberg, Fred G., 4,464,932, Cl. 73-204.000.
Ramot University Authority for Applied Research and Industry Development Ltd.: *See*—
Shvo, Youval, 4,465,847, Cl. 549-295.000.
Rasmussen, Ole-Bendt. Reticulate sheet product. 4,465,724, Cl. 428-109.000.
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Crofts, David; and Barnwell, David E., 4,465,717, Cl. 428-40.000.
Rayl, Martin: *See*—
Whitley, George J.; and Rayl, Martin, 4,464,829, Cl. 29-741.000.
Raytheon Company: *See*—
Sparks, Richard A., 4,465,974, Cl. 324-205.000.
RCA Corporation: *See*—
Abeyta, Isaac, 4,465,971, Cl. 324-158.00R.
Bogner, Bruce F., 4,466,090, Cl. 369-126.000.
Fitzgerald, William V., 4,466,051, Cl. 363-21.000.
Huang, Ho-Chung; Kumar, Mahesh; and Sechi, Franco N., 4,465,980, Cl. 330-149.000.
Nelson, Jordan R.; Wissing, William K.; and Dunn, Victor S., 4,465,616, Cl. 252-511.000.
Pike, Winthrop S., 4,465,981, Cl. 330-281.000.
Pritchard, Dalton H., 4,466,016, Cl. 358-31.000.
Ritzman, Ira G., 4,465,549, Cl. 156-630.000.
Turner, Robert L.; and Prusak, John J., 4,465,453, Cl. 425-384.000.
Wargo, Robert A.; and Perlman, Stuart S., 4,466,015, Cl. 358-27.000.
Whipple, Bruce A.; and Dunn, Victor S., 4,465,617, Cl. 252-511.000.
Whitley, George J.; and Rayl, Martin, 4,464,829, Cl. 29-741.000.
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Baldensperger, Gary L.; and Real, John D., 4,465,129, Cl. 165-153.000.
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Anderson, Milan B., 4,465,423, Cl. 414-462.000.
Rehberger, Tomaz, to Iskra-Sozd Elektrokovinske Industrije n.sol.o. Adjustable enclosed potentiometer. 4,465,994, Cl. 338-164.000.
Reick, Franklin G., to Ebert, Michael. Solar energy air-heating system. 4,465,058, Cl. 126-429.000.
Reid, Philip L. Apparatus for measuring gas transmission through films. 4,464,927, Cl. 73-38.000.
Reifers, Richard F.: *See*—
Bixler, Kenneth D.; Lord, Henry A.; and Reifers, Richard F., 4,465,225, Cl. 229-2.5EC.
Reinehr, Dieter: *See*—
Berger, Joseph; Pfeifer, Josef; and Reinehr, Dieter, 4,465,823, Cl. 528-345.000.
Reinelt, Werner: *See*—
Krieger, Karl; Kuschke, Gunter; and Reinelt, Werner, 4,465,408, Cl. 405-302.000.
Reis, Norbert J.: *See*—
Moran, Richard J.; and Reis, Norbert J., 4,466,039, Cl. 361-35.000.
Renner, Robert E., to GTE Automatic Electric Inc. Test data insertion arrangement for a conference circuit. 4,466,092, Cl. 370-13.000.
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Reppelin, Michel: *See*—
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Mason, Charles G., 4,465,117, Cl. 164-137.000.
Research Corporation: *See*—
Cidlowski, John A.; and Viceps-Madore, Dace, 4,465,776, Cl. 436-504.000.
Reyes, Jaime M., to ECD-ANR Energy Conversion Company. Substrateless thermoelectric device and method of making same. 4,465,894, Cl. 136-225.000.

Rhodes, James T.: *See*—
Groch, Mark W.; and Rhodes, James T., 4,466,075, Cl. 364-571.000.
Rhodes, Smith A., to Communications Satellite Corporation. TDMA/FSK Carrier synchronization without preamble. 4,466,108, Cl. 375-83.000.
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Desbois, Michel; and Reppelin, Michel, 4,465,842, Cl. 548-473.000.
Rice, Dennis A., to Deere & Company. Dozer attachment for excavator. 4,464,852, Cl. 37-117.500.
Richardson, Robert H.; and Richardson, Wayne. Motorcycle suspension system. 4,465,156, Cl. 180-227.000.
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Richman, David W., to McDonnell Douglas Corporation. Continuous flow electrophoresis apparatus. 4,465,582, Cl. 204-299.00R.
Richmond, Frank M.; Larson, Kenneth W.; and Miller, Robert A., to Baxter Travenol Laboratories, Inc. Collapsible multi-chamber medical fluid container. 4,465,488, Cl. 604-414.000.
Richmond, Michael S.: *See*—
Houseman, David L.; Jones, Thomas M.; Richmond, Michael S.; and Pilat, John F., 4,466,057, Cl. 364-200.000.
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Bajusz, Sandor; Ronai, Andras; Szekely, Jozsef; Graf, Laszlo ; and Mohai nee Nagy, Zsuzsa, 4,465,625, Cl. 260-112.50E.
Richter, Heinz: *See*—
Grunbein, Wolfgang; Lendle, Wilhelm; Post, Hendrik W.; Richter, Heinz; and Rossberg, Manfred, 4,465,880, Cl. 570-258.000.
Richter, Robert; Wiehn, Helmut; and Lichtenberger, Horst, to Deutsche Babcock Aktiengesellschaft. Steam generator with a main boiler and a fluidized bed furnace. 4,465,021, Cl. 122-4.00D.
Ricoh Company, Ltd.: *See*—
Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, 4,466,004, Cl. 346-74.400.
Oba, Hideaki; and Umehara, Masaakira, 4,465,767, Cl. 430-271.000.
Ohkubo, Toshimi, 4,465,931, Cl. 250-317.100.
Soejima, Toshiyuki, 4,466,025, Cl. 360-61.000.
Yazawa, Junichi, 4,465,345, Cl. 350-455.000.
Riddle, Guy G., to AT&T Bell Telephone Laboratories, Incorporated. Message routing in a computer network. 4,466,060, Cl. 364-200.000.
Riel, Frank J., to Rohr Industries, Inc. Noise suppression panel. 4,465,725, Cl. 428-116.000.
Rieter Machine Works Ltd.: *See*—
Ari, Necati; and Schneeberger, Ruedi, 4,465,242, Cl. 242-18.0PW.
Zingel, Heinz, 4,464,893, Cl. 57-267.000.
Riley, Mary: *See*—
Itri, Gary; and Riley, Mary, 4,465,262, Cl. 256-24.000.
Rinn, Jurgen; and Belitz, Fritz, to Minox GmbH. Microfilm card and a microfilm reader with automatic stage positioning. 4,465,349, Cl. 353-25.000.
Risberg, Robert L. Uninterrupted power system with frequency and phase control. 4,465,943, Cl. 307-67.000.
Ritchie, Leon T.: *See*—
Asick, John C.; Ritchie, Leon T.; and Zell, Dale R., 4,464,832, Cl. 29-839.000.
Rittmann, Friedrich: *See*—
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Ritzman, Ira G., to RCA Corporation. Method of removing a glass backing plate from one major surface of a semiconductor wafer. 4,465,549, Cl. 156-630.000.
Rival Manufacturing Company: *See*—
Chappell, William A.; Tweed, William J.; and Higgins, David T., 4,464,983, Cl. 99-312.000.
Roach, Robert E.: *See*—
Huffhines, Donald F.; and Roach, Robert E., 4,465,094, Cl. 137-557.000.
Robbins, Edward S., Jr. Composite metal and plastic fence. 4,465,263, Cl. 256-52.000.
Robert Bosch GmbH: *See*—
Bamer, Franz; Breuser, Erich; and Latsch, Reinhard, 4,465,031, Cl. 123-260.000.
Denz, Helmut; and Stumm, Hans-Peter, 4,465,043, Cl. 123-327.000.
Dworak, Wilhelm; Rustige, Hayno; and Wolff, Gunter, 4,465,444, Cl. 418-132.000.
Eckert, Konrad; Straubel, Max; and Vogel, Wilhelm, 4,465,049, Cl. 123-446.000.
Roberts, William J., to Allied Corporation. Motor speed control circuit. 4,465,958, Cl. 318-347.000.
Robertson, Raymond A., to Hewlett-Packard Company. Hybrid power switch. 4,466,038, Cl. 361-8.000.
Rock, Erich; and Brunner, Josef, to Julius Blum GmbH. Pull-out guide for drawers or the like. 4,465,324, Cl. 308-3.800.
Rockwell International Corporation: *See*—
Wagner, William R., 4,465,023, Cl. 122-6.00A.
Roder, Walter. Cutting apparatus for three-dimensional mouldings. 4,465,919, Cl. 219-121.0LG.
Rodewald, Paul G., to Mobil Oil Corporation. Silica-modified catalyst and use for selective production of para-dialkyl substituted benzenes. 4,465,886, Cl. 585-467.000.
Rodler, Waldo E., Jr., to FMC Corporation. Hydrostatic reaction transmission. 4,464,973, Cl. 89-40.00B.
Rodriguez, Sheila S.: *See*—
Toepker, Dennis C.; Rodriguez, Sheila S.; and Shulman, Joel I., 4,465,810, Cl. 525-285.000.
Rody, Jean: *See*—
Leppard, David G.; and Rody, Jean, 4,465,757, Cl. 430-216.000.
Leppard, David G.; and Rody, Jean, 4,465,765, Cl. 430-512.000.
Roepers, Harry F.; and Van Tilburg, Herman B., to Soltec B.V. Lead cutting machine. 4,464,960, Cl. 83-104.000.
Rogers, Norman H.: *See*—
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Rohr Industries, Inc.: *See*—
Riel, Frank J., 4,465,725, Cl. 428-116.000.
Roisen, David M. Collapsible structure for use with a recreational vehicle. 4,465,316, Cl. 296-161.000.
Rojey, Alexandre: *See*—
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Rom, Cornelis J. G.: *See*—
van der Lely, Ary; and Rom, Cornelis J. G., 4,465,211, Cl. 222-166.000.
Rom, Ernst: *See*—
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Romania, Samuel R.; and Smith, Grant M., to Burroughs Corporation. Wire form heat exchange element. 4,465,130, Cl. 165-185.000.
Rominger, Kathryn M.: *See*—
Armor, Anthony F.; Shartrand, Allan C.; Noel, David A.; and Rominger, Kathryn M., 4,465,947, Cl. 310-59.000.
Romund, Paula D.: *See*—
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Ronai, Andras: *See*—
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Roquette Freres: *See*—
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Rose, Kevin F.: *See*—
Messina, Samuel V.; and Rose, Kevin F., 4,465,278, Cl. 273-144.00B.
Rosemount Inc.: *See*—
Corpron, Gary P., 4,464,939, Cl. 73-861.240.
Rosen, Terry J.: *See*—
Firth, Bruce E.; and Rosen, Terry J., 4,465,871, Cl. 568-783.000.
Rosene, Michael R.: *See*—
Greenbank, Michael; and Rosene, Michael R., 4,465,875, Cl. 568-916.000.
Rosenquist, Joel C.; Thompson, Kenneth J.; and Foster, Wayne G., to Consolidated Foods Corporation. Knitting machine control system. 4,464,913, Cl. 66-166.000.
Rosenthal, Robert D., to Trebor Industries, Inc. Apparatus for near infrared quantitative analysis with temperature variation correction. 4,466,076, Cl. 364-571.000.
Rossberg, Manfred: *See*—
Grunbein, Wolfgang; Lendle, Wilhelm; Post, Hendrik W.; Richter, Heinz; and Rossberg, Manfred, 4,465,880, Cl. 570-258.000.
Rossi, Robert K., to Goodyear Tire & Rubber Company, The. Method of processing tire cord fabric. 4,465,709, Cl. 427-209.000.
Rosso Corporation: *See*—
Rotter, Gerhard, 4,465,248, Cl. 242-192.000.
Rotter, Gerhard, to Rosso Corporation. Tape drive mechanism. 4,465,248, Cl. 242-192.000.
Rourk, George W., to Williams International Corporation. Composite turbine wheel. 4,465,434, Cl. 416-230.000.
Roy, Richard D.: *See*—
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Royce, Richard K., to United States of America, Navy. Compact wideband multiple conductor monopole antenna. 4,466,003, Cl. 343-826.000.
Royer, Roger G.: *See*—
Chaney, John W.; and Royer, Roger G., 4,466,049, Cl. 361-383.000.
Ruegg, Andre, to Contraves AG. Injection apparatus for the dosed delivery of a liquid. 4,465,473, Cl. 604-154.000.
Rumsey, Stephen C., to Eastman Kodak Company. Apparatus and method for developing electrographic sheets. 4,465,361, Cl. 355-14.0SH.
Rupp, Warren E., to Warren Rupp Company, The. Check valve. 4,465,102, Cl. 137-849.000.
Russell, B. Don, Jr., to Texas A&M University System. High impedance fault detection apparatus and method. 4,466,071, Cl. 364-492.000.
Russer, Peter: *See*—
Huber, Hans P.; and Russer, Peter, 4,465,336, Cl. 350-96.300.
Russo, Richard, to Eichelberger, Fred S., a part interest. UHF antenna amplifier having planar transformers. 4,465,979, Cl. 330-66.000.
Rustige, Hayno: *See*—
Dworak, Wilhelm; Rustige, Hayno; and Wolff, Gunter, 4,465,444, Cl. 418-132.000.
Ruti-te Strake, B.V.: *See*—
Dekker, Martinus, 4,465,110, Cl. 139-370.200.
Ryan Homes, Inc.: *See*—
Gebhardt, Ronald E.; Haldeman, Richard C.; and Marten, Eric, 4,464,877, Cl. 52-745.000.
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Mandet, Gerard M. F.; and Marchi, Marc R., 4,465,432, Cl. 416-215.000.
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Sarsten, Rolf B.; and Nilsson, Sten E., 4,465,123, Cl. 165-16.000.

SAB Nife AB: *See*—
Carlsson, Erik M., 4,464,830, Cl. 29-763.000.

Sabatier, Michel, to L'Etat Francais. Process and device for measuring and adjusting out-of-track distances of helicopter rotor blades. 4,465,367, Cl. 356-23.000.

Sabelman, Eric E.; Koogle, Timothy A.; and Kennedy, William, to Collagen Corporation. Syringe force amplification device. 4,465,478, Cl. 604-224.000.

Sacher, Robert, to R. P. Cargille Laboratories, Inc. Immersion oil for microscopy and related applications. 4,465,621, Cl. 252-582.000.

Sachs-Dolmar GmbH: *See*—
Thomsen, Peter; and Mathner, Manfred, 4,465,440, Cl. 417-500.000.

Sadamasa, Tetsuo; Ichikawa, Osamu; and Beppu, Tatsuro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus and method for arranging semiconductor pellets. 4,465,543, Cl. 156-542.000.

Sadeh, Yaacov, to Beta Engineering and Development Ltd. Three dimensional digitizer for digitizing the surface contour of a solid body. 4,464,839, Cl. 33-1.00M.

Saegusa, Takashi; and Maida, Osamu, to Nippon Kogaku K.K. Light measuring device. 4,465,369, Cl. 356-222.000.

Saenger, Dietrich: *See*—
Leyrer, Reinhold J.; Saenger, Dietrich; and Klinsmann, Uwe, 4,465,760, Cl. 430-325.000.

Sagawa, Akio: *See*—
Tokunaga, Michio; Kitano, Junjiro; Sagawa, Akio; Hayashi, Toshio; and Hamazato, Kazuo, 4,465,967, Cl. 323-285.000.

Sahl, Johannes. Button sewing machine. 4,465,002, Cl. 112-111.000.

Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, to Matsushita Electric Works, Ltd. Artificial veneer and method of manufacturing the same. 4,465,539, Cl. 156-250.000.

Saikai, Toshihiro, to NSK Warner K.K. Automatic locking type take-up device. 4,465,245, Cl. 242-107.40D.

St. Germain, Anthony: *See*—
Versaggi, Gina; and St. Germain, Anthony, 4,465,062, Cl. 128-1.00R.

Saito, Etsuro, to Sony Corporation. Flexible disc recording and/or reproducing apparatus. 4,466,032, Cl. 360-99.000.

Saito, Kenji; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Cyclopentendione and cyclopentenone. 4,465,862, Cl. 568-379.000.

Saito, Tadao; and Iizuka, Shigeo, to Kao Soap Co., Ltd. Two-part liquid container with breakable partition. 4,465,183, Cl. 206-222.000.

Saitoh, Keishi: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,465,750, Cl. 430-57.000.

Saitoh, Toshio; Wakatsuki, Susumu; Kojima, Heiichiro; and Asaka, Noboru, to Fuji Xerox Co., Ltd. Original conveying device for a copying machine. 4,465,271, Cl. 271-227.000.

Sakai, Yoshiya; Nagai, Yasuhiro; Ikemoto, Kazuo; Aoki, Takakiyo; and Kanehira, Hidehiko, to Kobe Steel, Limited. Flux-cored wire for gas-shielded arc welding. 4,465,921, Cl. 219-146.240.

Sakamoto, Masahiko: *See*—
Kagohara, Hiromi; Iizuka, Nobuyuki; Fukui, Yutaka; and Sakamoto, Masahiko, 4,465,530, Cl. 148-410.000.

Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method and device for measuring a halftone dot area rate or a halftone picture density. 4,465,375, Cl. 356-434.000.

Sakashita, Akio, to Sony Corporation. Camera lens attachment mechanism. 4,466,019, Cl. 358-229.000.

Sakashita Co., Ltd.: *See*—
Okada, Hozuma, 4,465,730, Cl. 428-246.000.

Sakuma, Shinzo; Yanaginawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, to Kabushiki Kaisha Meidensha. Operating device for effecting opening and closing operation of a vacuum interrupter with an electromagnet incorporated therein. 4,465,991, Cl. 335-151.000.

Sakuma, Tsurukichi: *See*—
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Sakurai, Tadashi: *See*—
Ohgishi, Tsutomu; and Sakurai, Tadashi, 4,466,127, Cl. 455-182.000.

Sale, Frank R.; and Yorucu, Huseyin, to National Research Development Corporation. Making niobium intermetallic compounds. 4,465,511, Cl. 75-0.50B.

Salee, Gideon: *See*—
Kosanovich, George M.; and Salee, Gideon, 4,465,819, Cl. 528-176.000.

Salerno, Giuseppe: *See*—
Chiusoli, Gian P.; Pallini, Luciano; and Salerno, Giuseppe, 4,465,634, Cl. 260-413.000.

Samuels, Peter B.; and Lee, George S. Method of applying skin clips. 4,465,071, Cl. 128-335.000.

Sanchez, Alain: *See*—
Bourrel, Maurice; Sanchez, Alain; and Soula, Jean-Claude, 4,465,494, Cl. 44-51.000.

Sanders, John M.: *See*—
Nicolozakes, Basil J.; Sanders, John M.; Chiangi, Daniel P.; and Pacula, Chris M., 4,465,224, Cl. 228-222.000.

Sandoz Ltd.: *See*—
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, 4,465,516, Cl. 106-14.120.
Pedrazzi, Reinhard, 4,465,627, Cl. 260-153.000.

Sanimu Co., Ltd.: *See*—
Onodera, Takehiko, 4,464,860, Cl. 446-491.000.

Santambrogio, Alberto: *See*—
Koch, Paolo; and Santambrogio, Alberto, 4,465,603, Cl. 252-33.400.

Santis, Dean C., to International Harvester Co. Steering console providing digital readout displays. 4,464,933, Cl. 73-432.0AD.

Sanyo Electric Co., Ltd.: *See*—
Fujimoto, Isao, 4,466,126, Cl. 455-169.000.
Ohgishi, Tsutomu; and Sakurai, Tadashi, 4,466,127, Cl. 455-182.000.

Saransaari, Pertti: *See*—
Kontturi, Risto; Kahkipuro, Matti; and Saransaari, Pertti, 4,466,053, Cl. 363-129.000.

Sari, Hikmet, to U.S. Philips Corporation. Carrier recovery arrangement for sixteen-state amplitude and phase modulation and receiving system for digital data, comprising such an arrangement. 4,466,109, Cl. 375-86.000.

Sarsten, Rolf B.; and Nilsson, Sten E., to Saab-Scania Aktiebolag. Vehicle ventilating system. 4,465,123, Cl. 165-16.000.

Sasaki, Ryuzo: *See*—
Chiba, Hideo; Sasaki, Ryuzo; and Ueda, Masatsugu, 4,465,624, Cl. 260-112.00R.

Sasaki, Shosaku: *See*—
Shirahata, Akihiko; and Sasaki, Shosaku, 4,465,818, Cl. 528-12.000.

Sasaki, Takashi: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,465,766, Cl. 430-552.000.

Sasaki, Yukio: *See*—
Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamanaka, Shigeru, 4,465,631, Cl. 260-239.100.

Satellite Business Systems: *See*—
Dalby, James F., 4,465,951, Cl. 310-114.000.

Sato, Fumitaka: *See*—
Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, 4,466,055, Cl. 364-200.000.

Sato, Haruhito, to Idemitsu Kosan Company Limited. Process for the production of carboxylic acid esters. 4,465,852, Cl. 560-247.000.

Sato, Hideo: *See*—
Kawamura, Kouichi; and Sato, Hideo, 4,465,751, Cl. 430-64.000.

Sato, Hiroshi; Watanabe, Haruo; and Suganuma, Nobuo, to Lion Corporation. Oral compositions of tranexamic acid and carvone. 4,465,662, Cl. 424-54.000.

Sato, Masayuki, to Kabushiki Kaisha Komatsu Seisakusho. Pressure control system for a transmission. 4,465,168, Cl. 192-3.570.

Sato, Morihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Nuclear reactor. 4,465,653, Cl. 376-404.000.

Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photosensitive materials for color photography. 4,465,766, Cl. 430-552.000.

Sato, Takateru: *See*—
Ishida, Toshihiko; Shiba, Haruo; and Sato, Takateru, 4,466,036, Cl. 360-132.000.

Sato, Yasuyuki; Nakamura, Norihiko; and Kobayashi, Tatsuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Spark plug for internal combustion engines. 4,465,952, Cl. 313-136.000.

Sato, Yutaka: *See*—
Manabe, Katsuhide; Sato, Yutaka; and Muroi, Ryoichi, 4,465,715, Cl. 427-444.000.

Satoh, Toshio: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; and Tendo, Atsushi, 4,465,851, Cl. 560-125.000.

Sattelmeyer, Richard; Schmelzer, Heinz; and Gutte, Richard, to Hoechst Aktiengesellschaft. Thermoplastic composition of acrylic copolymers and crosslinking agents and process for its preparation. 4,465,813, Cl. 525-366.000.

Satz, Richard: *See*—
Chernotsky, Alan; and Satz, Richard, 4,465,965, Cl. 323-239.000.

Saumweber, Eckart; Beckmann, Heinrich; and Ottersbach, Jens, to Knorr-Bremse GmbH. Anti-locking brake force regulating device. 4,466,066, Cl. 364-426.000.

Sauter, Walter A.: *See*—
Ghose, Rabindra N.; and Sauter, Walter A., 4,466,131, Cl. 455-278.000.

Sawatani, Tadashi: *See*—
Yoshimura, Hirofumi; Ishii, Mitsuo; Sawatani, Tadashi; and Minamino, Shigeru, 4,465,525, Cl. 148-37.000.

Schaaf, Robert L.: *See*—
Kan, Peter T.; Schaaf, Robert L.; Medaugh, Lewis N.; and Volz, William E., 4,465,638, Cl. 260-453.0SP.

Schaefer Marine, Inc.: *See*—
Merry, Carl A., 4,465,011, Cl. 114-199.000.

Schafer, Kenneth L. Apparatus for prevention of freezing of water line. 4,465,020, Cl. 119-73.000.

Schammel, Wayne P., to Standard Oil Company (Indiana). Process for producing butylene polymers having molecular weights in the range of from about 400 to 5000 molecular weight. 4,465,887, Cl. 585-517.000.

Schaper, Wolfgang: *See*—
Wissler, Josef H.; and Schaper, Wolfgang, 4,465,669, Cl. 424-177.000.

Scheffee, Robert S., to Atlantic Research Corporation. Process for making coal-water fuel slurries and product thereof. 4,465,495, Cl. 44-51.000.

Scheiderer, Gerrit: *See*—
Bendler, Hellmut; and Scheiderer, Gerrit, 4,464,990, Cl. 102-204.000.

Schibinger, Joseph S.: *See*—
DeSantis, Alfred J.; and Schibinger, Joseph S., 4,466,061, Cl. 364-200.000.
Schimmel, Vernon R., to Symons Corporation. Concrete forming structure having a double hinge filler. 4,465,257, Cl. 249-11.000.
Schlatter, Martin E.: *See*—
Martin, Harry F.; and Schlatter, Martin E., 4,465,429, Cl. 415-116.000.
Schlegel Corporation: *See*—
Yackiw, Charles, 4,464,864, Cl. 49-404.000.
Schmelzer, Heinz: *See*—
Sattelmeyer, Richard; Schmelzer, Heinz; and Gutte, Richard, 4,465,813, Cl. 525-366.000.
Schmidhuber, Klaus: *See*—
Lossel, Walter; and Schmidhuber, Klaus, 4,465,955, Cl. 318-139.000.
Schmidt, Delf: *See*—
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans P.; and Puls, Walter, 4,465,684, Cl. 424-250.000.
Schmidt, Glenn H. Method of sustaining metallic golf club head sole plate profile by confined brazing or welding. 4,465,221, Cl. 228-125.000.
Schmidt, Horst, to Ernst Leitz Wetzlar GmbH. Device for the photoelectric determination of the position of at least one focal plane of an image. 4,465,366, Cl. 356-1.000.
Schmidt, Robert: *See*—
Forster, Heinz; Mues, Volker; Baasner, Bernd; Hagemann, Hermann; Eue, Ludwig; and Schmidt, Robert, 4,465,504, Cl. 71-88.000.
Schmidt-Ruppin, Karl H.: *See*—
Lukas, Bohumir; Wiesendanger, Walter; and Schmidt-Ruppin, Karl H., 4,465,666, Cl. 424-145.000.
Schmitt, Klaus; and Gehendges, Manfred, to Hoechst Aktiengesellschaft. Cleaning device for cleaning the peripheral surface of a photoconductive drum in an electrophotographic copier. 4,465,363, Cl. 355-15.000.
Schmitter, Albert, to Mettler Instruments AG. Precision balance with improved immunity to temperature and pressure variations. 4,465,152, Cl. 177-180.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Oral product having improved taste. 4,465,661, Cl. 424-49.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Polyoxybutylene-polyoxyethylene aqueous gels. 4,465,663, Cl. 424-62.000.
Schmoock, Helmuth. Method of making a printed circuit board. 4,465,538, Cl. 156-233.000.
Schneeberger, Ruedi: *See*—
Ari, Necati; and Schneeberger, Ruedi, 4,465,242, Cl. 242-18.0PW.
Schneider, Howard. Apparatus and method of determining fertility status. 4,465,077, Cl. 128-738.000.
Schoen, Neil C. Relativistic electron synchrotron laser oscillator or amplifier. 4,466,101, Cl. 372-2.000.
Schoenberg, George R. Ballistic missile structure simulator. 4,465,464, Cl. 434-12.000.
Schoettle, Klaus: *See*—
Glinsorz, Lothar; Dobler, Peter; and Schoettle, Klaus, 4,465,247, Cl. 242-192.000.
Scholtissek, Georg; and Grohmann, Peter, to Veb Kombinat Fortschritt Landmaschinen. Intake reel for agricultural machine. 4,464,890, Cl. 56-364.000.
Scholz, Hans; and Bailey, Paul C., to English Electric Valve Company Limited. Photosensitive tube with light bias. 4,465,927, Cl. 250-213.0VT.
Schonwald, Siegfried, to Siemens Aktiengesellschaft. Radial piston compressor. 4,465,436, Cl. 417-271.000.
Schopieray, James L., to Schopieray, James L.; and Smith, Thomas E. Permanent wave rod. 4,465,085, Cl. 132-42.00A.
Schossler, Werner: *See*—
Heinemann, Otto; Lucke, Helmut; Grothaus, Hubert; Krumme, Helmut; Linzel, Leonhard; Schossler, Werner; and Heiringhoff, Burkhard, 4,465,383, Cl. 384-100.000.
Schreiber, Jean-Pierre; and Vial, Christian, to Soletanche. Method of constructing poured-concrete wall panels and wall thus obtained. 4,465,403, Cl. 405-267.000.
Schroder, Hans J. Steam generator. 4,465,025, Cl. 122-19.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, to Bayer Aktiengesellschaft. Process for the production of hydantoins. 4,465,839, Cl. 548-310.000.
Schulte, Bernhard; Jakob, Wolfgang; Dunwald, Willi; and Meyer, Karl-Heinrich, to Bayer Aktiengesellschaft. Process for the production of (thio) hydantoins. 4,465,840, Cl. 548-310.000.
Schumacher, Peter, to Hauni-Werke Korber & Co. K.G. Transfer apparatus for cigarettes or the like. 4,465,083, Cl. 131-282.000.
Schumacher, Robert C. Woodworking bench. 4,465,114, Cl. 144-286.00R.
Schuman, Klaus: *See*—
Altenschopfer, Theodor; and Schuman, Klaus, 4,465,612, Cl. 252-143.000.
Schupphaus, Herbert, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Cutter drum assembly for longwall mining machines. 4,465,320, Cl. 299-81.000.
Schutz, Alain: *See*—
Jacobs, Pierre; Poncelet, Georges; and Schutz, Alain, 4,465,892, Cl. 585-666.000.
Schutz, Winfried. Dental-orthodontic device. 4,465,461, Cl. 433-3.000.
Schwab, Pierre P., to B/K Patent Development Co., Inc. Electrical shunts for integrated circuit applications. 4,466,048, Cl. 361-331.000.
Schwappach, Dieter, to O&K Orenstein & Koppel Aktiengesellschaft. Device for the paraxial kinetic control of a lifting machine boom. 4,465,425, Cl. 414-685.000.
Schwarz, Jerry W.: *See*—
Willis, William M., 4,464,929, Cl. 73-146.800.
Schwarz, Johann. Mechanism for adjusting a lumbar support of a back of a seat or the like. 4,465,317, Cl. 297-284.000.
Schwarzbach, Horst: *See*—
Weber, Lothar; Wojtek, Friedhelm; and Schwarzbach, Horst, 4,464,831, Cl. 29-825.000.
Schwendimann, Robert. Combined structural and solar panel. 4,464,871, Cl. 52-220.000.
Schwickrath, Bruce R.: *See*—
Witulski, Arthur F.; and Schwickrath, Bruce R., 4,466,041, Cl. 361-93.000.
Schwing, Friedrich, to Friedrich Wilh. Schwing GmbH. Two-cylinder pump for heavy flowable materials, such as concrete. 4,465,441, Cl. 417-517.000.
Schwob, Pierre, to SEB S.A. Appliance for wax depilation, especially for facial use. 4,465,073, Cl. 128-355.000.
Scientific-Atlanta, Inc.: *See*—
Banker, Robert O., 4,466,017, Cl. 358-120.000.
SCM Corporation: *See*—
Jasko, James J.; and Domek, Susan M., 4,465,703, Cl. 426-607.000.
Scott & Fetzer Company, The: *See*—
Karpanty, David J., 4,464,810, Cl. 15-320.000.
SEB S.A.: *See*—
Schwob, Pierre, 4,465,073, Cl. 128-355.000.
Sebag, Henri: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,465,860, Cl. 568-37.000.
Sechi, Franco N.: *See*—
Huang, Ho-Chung; Kumar, Mahesh; and Sechi, Franco N., 4,465,980, Cl. 330-149.000.
Security Network International, Inc.: *See*—
Hines, Thomas N., 4,465,997, Cl. 340-542.000.
Segarra, Gerard; and Phulpin, Francois J., to U.S. Philips Corporation. System intercommunication processor used in distributed data processing system. 4,466,063, Cl. 364-200.000.
Seidman, Martin; and Niekamp, Carl W., to A. E. Staley Manufacturing Company. Diacetone fructose hydrolysis with water-insoluble catalysts. 4,465,521, Cl. 127-36.000.
Seike, Shoji: *See*—
Mitsumatsu, Yoshio; and Seike, Shoji, 4,465,900, Cl. 174-209.000.
Seikosha Co., Ltd.: *See*—
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, 4,465,386, Cl. 400-121.000.
Seino, Tadashi, to Tohoku Mikuni Kogyo Co., Ltd. Magnetically-coupled reciprocating pump. 4,465,439, Cl. 417-417.000.
Seitz, Alan F.; and Seitz, Karl G., to Data Motion, Inc. Daisy wheel mounting apparatus. 4,465,387, Cl. 400-175.000.
Seitz, Karl G.: *See*—
Seitz, Alan F.; and Seitz, Karl G., 4,465,387, Cl. 400-175.000.
Sekine, Hiroyasu: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; and Tendo, Atsushi, 4,465,851, Cl. 560-125.000.
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, to Ube Industries Ltd. Diphenyl ether derivatives, process for preparing the same and herbicidal compositions containing the same. 4,465,503, Cl. 71-88.000.
Selince, Gerard, to Societe Nationale Industrielle Aerospatiale. Lateral acceleration control method for missile and corresponding weapon systems. 4,465,249, Cl. 244-3.150.
Selines, Ronald J.; Hagerty, Lawrence J.; and Hilty, Donald C., to Union Carbide Corporation. Process to control the shape of inclusions in steels. 4,465,513, Cl. 75-53.000.
Semperit Aktiengesellschaft: *See*—
Heissenberger, Oswald; and Brandstatter, Erwin, 4,464,796, Cl. 2-168.000.
Senaha, Susumu; Chiba, Tetsuya; Ohno, Akira; and Katayama, Shitomi, to Yokohama Kiko Co., Ltd.; and NHK Spring Co., Ltd. Heat-resisting layer-constructions and method for preparing the same. 4,465,711, Cl. 427-379.000.
Senatro, Clement A., to United Technologies Corporation. Clamp. 4,464,814, Cl. 24-279.000.
Sepp, Guenther: *See*—
Siemsen, Dieter; and Sepp, Guenther, 4,465,334, Cl. 350-96.330.
Serrano, Arthur L., to Novation, Inc. Frequency shift keyed modem chip set. 4,466,106, Cl. 375-9.000.
Sewald, Richard T., Sr.: *See*—
Herman, Stewart T.; Pfeiffer, James B.; Sewald, Richard T., Sr.; and Sterner, Charles J., 4,465,597, Cl. 210-713.000.
Sewer Rodding Equipment Co.: *See*—
Prange, Charles J., 4,464,806, Cl. 15-104.3SN.
Sewerinson, Ake N., to Ael Microtel Limited. Two pilot frequency control for communication systems. 4,466,130, Cl. 455-260.000.
Shanbrom, Edward: *See*—
Chanas, Maryse; Liautaud, Jacques; Pla, Jean; and Shanbrom, Edward, 4,465,623, Cl. 260-112.00B.
Shapiro, Wilbur: *See*—
Heshmat, Hooshang; Shapiro, Wilbur; and Gray, Stanley, 4,465,384, Cl. 384-106.000.
Sharp Kabushiki Kaisha: *See*—
Yamagishi, Toshio; Uchiyama, Hiroaki; Itoh, Ikuo; and Imanaka, Yoshiaki, 4,465,360, Cl. 355-14.00R.
Yoshimura, Hisashi, 4,466,005, Cl. 346-140.00R.

Sharp, Richard F., to Deere & Company. Control device and method for activating a fuel injector nozzle. 4,465,231, Cl. 239-5.000.

Shartrand, Allan C.: *See*—
Armor, Anthony F.; Shartrand, Allan C.; Noel, David A.; and Rominger, Kathryn M., 4,465,947, Cl. 310-59.000.

Shea, John R., Jr.; Hall, A. Risher; and Hordis, Robert C., to Hordis Brothers, Inc. Window unit. 4,464,874, Cl. 52-398.000.

Shell Oil Company: *See*—
Brownscombe, Thomas F.; and Mango, Frank D., 4,465,797, Cl. 523-216.000.
Edwards, Charles L., 4,465,877, Cl. 568-618.000.
Feenstra, Robijn; and Kamp, Anthony W., 4,465,147, Cl. 175-73.000.

Sherwood Medical Company: *See*—
Huang, John J.; Chen, Jung-Shou; and Mezei, Louis M., 4,465,774, Cl. 436-15.000.

Shiba, Haruo: *See*—
Ishida, Toshihiko; Shiba, Haruo; and Sato, Takateru, 4,466,036, Cl. 360-132.000.

Shibata, Akira: *See*—
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.

Shibata, Toshihiko: *See*—
Iuchi, Tohru; Watanabe, Kunitoshi; Shibata, Toshihiko; and Kawamura, Tetsuro, 4,465,382, Cl. 374-9.000.

Shibata, Yuji: *See*—
Kawano, Hisao; Naito, Shun-ichi; and Shibata, Yuji, 4,466,095, Cl. 370-63.000.

Shibukawa, Mitsuru: *See*—
Nishikido, Joji; Kodama, Eiji; and Shibukawa, Mitsuru, 4,465,668, Cl. 424-177.000.

Shields, Susan J., to Hercules Incorporated. Denture adhesive composition. 4,465,517, Cl. 106-35.000.

Shigemasa, Takashi; and Takagi, Yasuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Improved proportional integral-derivative control apparatus. 4,466,054, Cl. 364-162.000.

Shih, David H.: *See*—
Christensen, Burton G.; and Shih, David H., 4,465,632, Cl. 260-245.20T.

Shillito, Richard: *See*—
Pamplin, John W.; Astbury, Brian R.; Shillito, Richard; and Hancock, James J., 4,464,922, Cl. 72-286.000.

Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Impact type dot printer. 4,465,386, Cl. 400-121.000.

Shimazu, Teruo; Edamoto, Toshio; and Miyazawa, Azuma, to Mitsumi Electric Co. Ltd. Push-button type tuning apparatus. 4,464,944, Cl. 74-10.330.

Shimizu, Hisayuki: *See*—
Matsuura, Toshio; Suwa, Kyoichi; Shimizu, Hisayuki; and Tanimoto, Akikazu, 4,465,368, Cl. 356-218.000.

Shimoda, Elwyn, to Conoco Inc. Method of increasing the efficiency of cyclone-fired boilers using high sodium lignite fuel. 4,465,000, Cl. 110-343.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Terae, Nobuyuki; and Abe, Akira, 4,465,849, Cl. 556-450.000.

Shin, Yasuhiro, to Oki Electric Industry Co., Ltd. Three state input circuits. 4,465,944, Cl. 307-473.000.

Shingu, Tadashi: *See*—
Nishihara, Toshio; Shingu, Tadashi; and Suzuki, Nobuo, 4,465,736, Cl. 428-332.000.

Shinohara, Hironobu: *See*—
Yoshida, Yoshinori; and Shinohara, Hironobu, 4,465,853, Cl. 560-262.000.

Shirafuji, Hideo: *See*—
Nogami, Ikuo; Shirafuji, Hideo; and Matsumura, Shigeo, 4,465,771, Cl. 435-68.000.

Shirahata, Akihiko; and Sasaki, Shosaku, to Toray Silicone Company, Ltd. Room temperature stable, heat activated organopolysiloxane compositions. 4,465,818, Cl. 528-12.000.

Shirai, Shigeru: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; and Osato, Yoichi, 4,465,750, Cl. 430-57.000.

Shiraishi, Hiroshi: *See*—
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Noncgaki, Saburo, 4,465,768, Cl. 430-296.000.

Shiratori, Harunori; and Tsukamoto, Yoshikazu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Tokai Rubber Industries, Ltd. Upper support in vehicle suspension systems. 4,465,296, Cl. 280-668.000.

Shirk, Raymond A.: *See*—
Belke, Robert E., Jr.; and Shirk, Raymond A., 4,465,547, Cl. 156-629.000.

Showalter, Stephen D.: *See*—
Hampar, Berge; and Showalter, Stephen D., 4,465,769, Cl. 435-6.000.

Shroot, Braham; Maignan, Jean; and Lang, Gerard, to Groupement d'Interet Economique Centre International de Recherches Dermatologiques C.I.R.D. 9,10-Dihydro-1,8,9-trihydroxy-9,10-anthracene α,β-endosuccinimide,α,β-endosuccinic acid and α,β-endomaleic acid and derivative thereof. 4,465,688, Cl. 424-274.000.

Shuford, David M., to Vought Corporation. Composition and method for forming a protective coating on carbon-carbon substrates. 4,465,777, Cl. 501-88.000.

Shull, Jessie J.; and Hunt, Jimmy J. Portable hermetic compressor cutting machine. 4,464,865, Cl. 51-105.00R.

Shulman, Joel I.: *See*—
Toepker, Dennis C.; Rodriguez, Sheila S.; and Shulman, Joel I., 4,465,810, Cl. 525-285.000.

Shvo, Youval, to Ramot University Authority for Applied Research and Industry Development Ltd. Method for the production of butyrolactones. 4,465,847, Cl. 549-295.000.

Siemens Aktiengesellschaft: *See*—
Claussen, Ulf, 4,466,070, Cl. 364-480.000.
Eberling, Richard; and Voll, Werner, 4,465,415, Cl. 414-122.000.
Kopp, Walter, 4,465,112, Cl. 141-284.000.
Lossel, Walter; and Schmidhuber, Klaus, 4,465,955, Cl. 318-139.000.
Mugrauer, Hubert; and Kopp, Walter, 4,465,357, Cl. 355-3.00R.
Munt, Hartwig, 4,466,043, Cl. 361-120.000.
Patalong, Hubert, 4,466,010, Cl. 357-38.000.
Schonwald, Siegfried, 4,465,436, Cl. 417-271.000.
von Criegern, Rolf; and Weitzel, Ingo, 4,465,935, Cl. 250-440.100.

Siemens Aktiengesellschaft Berlin & Munchen: *See*—
Bajka, Imre; and Furrer, Robert, 4,465,014, Cl. 118-114.000.

Siemens Corporation: *See*—
Southard, Gary, 4,466,098, Cl. 371-9.000.

Siemens Gammasonics, Inc.: *See*—
Groch, Mark W.; and Rhodes, James T., 4,466,075, Cl. 364-571.000.

Siemsen, Dieter; and Sepp, Guenther, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Multilayer fiber light conductor. 4,465,334, Cl. 350-96.330.

Simmons, John J. Seed coating machine. 4,465,017, Cl. 118-418.000.

Simms, Alfred P. Methods of use of distribution modules for multi-wire group interconnection in telephone or like multi-wire distribution systems. 4,464,834, Cl. 29-854.000.

Simon, Wayne E., to United States of America, Air Force. Lateral support system for canister-launched missile. 4,464,972, Cl. 89-1.816.

Singer Company, The: *See*—
Barthel, Richard C.; and Roy, Richard D., 4,466,040, Cl. 361-92.000.
Krupick, Walter J., 4,464,942, Cl. 74-5.00F.
Wurst, John W., 4,465,004, Cl. 112-264.100.

Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with substituted 3,6-diphenyl-3,4-dihydro-2H-1,3,5-oxadiazine-2,4-diones. 4,465,682, Cl. 424-248.570.

Sitler, James W.: *See*—
Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., 4,464,908, Cl. 62-235.100.

Sjogren, John A.: *See*—
Byrod, Eva K.; and Sjogren, John A., 4,465,667, Cl. 424-156.000.

Skandinavisk Installationssamordning AB (SISAM AB): *See*—
Litzberg, Lennert K., 4,464,909, Cl. 62-260.000.

Skarstad, Paul M.; and Hayes, Thomas G., to Medtronic, Inc. Electrochemical cells having lithium tetrachloroiodate cathodes. 4,465,743, Cl. 429-105.000.

Skistimas, Donald V.: *See*—
Holmes, Rory A.; and Skistimas, Donald V., 4,465,726, Cl. 428-131.000.

Sklavounos, Constantine, to Pfizer Inc. Process for preparation, isolation and purification of dipeptide sweeteners. 4,465,626, Cl. 260-112.50R.

Skutta, Frank R., to Motorola, Inc. Noise reducing circuitry for single sideband receivers. 4,466,129, Cl. 455-219.000.

Slater, Christopher J., to Dunlop Limited. Flexible hose. 4,465,105, Cl. 138-104.000.

Sloane, Edwin A., to Fairchild Camera and Instrument Corp. Method and apparatus for analyzing an analog-to-digital converter with a nonideal digital-to-analog converter. 4,465,995, Cl. 340-347.0CC.

Smith, Grant M.: *See*—
Romania, Samuel R.; and Smith, Grant M., 4,465,130, Cl. 165-185.000.

Smith International, Inc.: *See*—
Morris, John F.; and Worrell, Robert V., 4,465,148, Cl. 175-329.000.

Smith, Michael C.; and Linne, Robert S., to Southwire Company. Inclined wheel and belt casting machine. 4,465,120, Cl. 164-482.000.

Smith, Richard L., to Phillips Petroleum Company. Conversion of polymer lithium to polymer carboxylate. 4,465,809, Cl. 525-284.000.

Smith, Roderick L.; and Kolell, Norbert C., to Energy-Adaptive Grinding, Inc. Control system for finish grinding methods and apparatus. 4,464,866, Cl. 51-165.870.

Smith, Thomas E.: *See*—
Schopieray, James L., 4,465,085, Cl. 132-42.00A.

Smith, William E.: *See*—
Zimmer, Mark F.; Smith, William E.; and Malpass, Donald F., Jr., 4,465,786, Cl. 502-169.000.

Smithkline Beckman Corporation: *See*—
DeMarinis, Robert M.; Hieble, Jacob P.; and Matthews, William D., 4,465,677, Cl. 424-244.000.

Smithkline-Rit: *See*—
Dobrescu, Lucia, 4,465,665, Cl. 424-92.000.

Snelgrove, Ronald C.; and Brinkhof, Joseph B., to Budd Canada Inc. Engine block heater with expansion yoke. 4,465,039, Cl. 123-142.50E.

Snow Brand Milk Products Co., Ltd.: *See*—
Chiba, Hideo; Sasaki, Ryuzo; and Ueda, Masatsugu, 4,465,624, Cl. 260-112.00R.

Snyder Laboratories, Inc.: *See*—
Weilbacher, Eugene E., 4,465,483, Cl. 604-317.000.

Societe Anonyme D.B.A.: *See*—
Courbot, Pierre, 4,464,951, Cl. 74-501.50R.
Deligny, Jean, 4,464,950, Cl. 74-501.50R.
Kervagoret, Gilbert, 4,465,099, Cl. 137-625.230.
Societe Anonyme dite: Institut Merieux: *See*—
Chanas, Maryse; Liautaud, Jacques; Pla, Jean; and Shanbrom, Edward, 4,465,623, Cl. 260-112.00B.
Societe Anonyme dite: L'Oreal: *See*—
Vanlerberghe, Guy; and Sebag, Henri, 4,465,860, Cl. 568-37.000.
Societe Chimique des Carbonnages S.A.: *See*—
Mehalla, Hacene, 4,465,811, Cl. 525-249.000.
Societe Chimique des Charbonnages-CdF Chimie: *See*—
Le Brasseur, Genevieve, 4,465,781, Cl. 502-104.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Pagliaro, Fulvio A.; Franklin, James G.; and Gasser, Rupert J., 4,465,699, Cl. 426-428.000.
Societe Nationale Elf Aquitaine: *See*—
Bourrel, Maurice; Sanchez, Alain; and Soula, Jean-Claude, 4,465,494, Cl. 44-51.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Selince, Gerard, 4,465,249, Cl. 244-3.150.
Sodeco-Saia SA: *See*—
Guttinger, Kurt, 4,465,950, Cl. 310-162.000.
Soejima, Toshiyuki, to Ricoh Company, Ltd. Floppy disc device with a delay mechanism. 4,466,025, Cl. 360-61.000.
Sokolich, James M., to Allied Corporation. Connection arrangement for printed circuit board testing apparatus. 4,465,972, Cl. 324-158.00F.
Solarz, Gilbert: *See*—
Bakker, John A.; and Solarz, Gilbert, 4,464,813, Cl. 24-237.000.
Soletanche: *See*—
Schreiber, Jean-Pierre; and Vial, Christian, 4,465,403, Cl. 405-267.000.
Solmat Systems, Ltd.: *See*—
Elata, Chaim, 4,465,056, Cl. 126-415.000.
Soltec B.V.: *See*—
Roepers, Harry F.; and Van Tilburg, Herman B., 4,464,960, Cl. 83-104.000.
Sommer geb. Heyd, Ursula: *See*—
Sommer, Manfred, 4,465,445, Cl. 418-152.000.
Sommer, Manfred, to Sommer geb. Heyd, Ursula. Rotary pivoted vane pump. 4,465,445, Cl. 418-152.000.
Soneda, Mitsuo; Noguchi, Takashi; and Ohtsu, Takaji, to Sony Corporation. Image pickup apparatus with gain controlled output amplifier. 4,466,018, Cl. 358-213.000.
Sonetaka, Kazunori: *See*—
Nishino, Atsushi; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,465,458, Cl. 431-208.000.
Sonke, Horst: *See*—
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.
Sony Corporation: *See*—
Busby, Bruce E., 4,466,023, Cl. 360-55.000.
Saito, Etsuro, 4,466,032, Cl. 360-99.000.
Sakashita, Akio, 4,466,019, Cl. 358-229.000.
Soneda, Mitsuo; Noguchi, Takashi; and Ohtsu, Takaji, 4,466,018, Cl. 358-213.000.
Tanaka, Masato, 4,466,029, Cl. 360-72.200.
Wachi, Shigeaki, 4,466,089, Cl. 369-59.000.
Sorel, Alain; and Bury, Michel, to U.S. Philips Corporation. Device for the simultaneous mounting of components on a carrier. 4,465,206, Cl. 221-94.000.
Sorelec: *See*—
Leroy, Claude, 4,465,060, Cl. 126-443.000.
Sorensen, Ian W., to Allied Corporation. Multicomponent thermoplastic polymer blends. 4,465,804, Cl. 524-505.000.
Soroka, Walter G.; and Galda, Michael P., to Barbecon Inc. Inflatable packaging structure. 4,465,188, Cl. 206-522.000.
Soula, Jean-Claude: *See*—
Bourrel, Maurice; Sanchez, Alain; and Soula, Jean-Claude, 4,465,494, Cl. 44-51.000.
Southard, Gary, to Siemens Corporation. Cross channel circuit for an electronic system having two or more redundant computers. 4,466,098, Cl. 371-9.000.
Southwire Company: *See*—
Smith, Michael C.; and Linne, Robert S., 4,465,120, Cl. 164-482.000.
Soyez, Werner, to Chemische Werke Huls Aktiengesellschaft. Process for removing heavy metal ash from an aqueous soot suspension. 4,465,596, Cl. 210-634.000.
Spademan, Richard G. Dynamic ski boot positioning apparatus. 4,465,295, Cl. 280-612.000.
Sparks, Richard A., to Raytheon Company. Apparatus for measuring magnetic field characteristics of magnetic materials. 4,465,974, Cl. 324-205.000.
Speckman, Donald T.: *See*—
Rau, Allen H.; and Speckman, Donald T., 4,465,828, Cl. 536-18.600.
Speil, Walter, to Motomak Motorenbau Maschinen- Und Werkzeugfabric, Konstruktionen GmbH. Valve tappet. 4,465,038, Cl. 123-90.550.
Spencer Wright Industries, Inc.: *See*—
Ingram, Gary L., 4,465,001, Cl. 112-79.00A.
Speranza, George P.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,465,793, Cl. 521-172.000.
Klein, Howard P.; and Speranza, George P., 4,465,791, Cl. 521-115.000.
Sperry Corporation: *See*—
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,464,887, Cl. 56-16.500.
De Coene, Frans J. G. C., 4,465,080, Cl. 130-27.0AA.
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,465,081, Cl. 130-27.0HF.
Strubbe, Gilbert J. I., 4,465,082, Cl. 130-27.00E.
Spijker, Ruud, to Unie van Kunstmestfabrieken B.V. Process for the preparation of pure silicon dioxide and silicon dioxide obtained by applying this process. 4,465,657, Cl. 423-339.000.
Spitaler, Englebert; Oberleitner, Gerhard; and Nitschko, Theodor, to TMC Corporation. Safety ski binding. 4,465,294, Cl. 280-612.000.
Spoor, Herbert: *See*—
Burkert, Hans; Hartmann, Juergen; Jung, Dietmar; Heide, Wilfried; Hartmann, Heinrich; and Spoor, Herbert, 4,465,599, Cl. 210-734.000.
Linhart, Friedrich; Hartmann, Juergen; Jung, Dietmar; Hartmann, Heinrich; and Spoor, Herbert, 4,465,555, Cl. 162-168.200.
Sprague Electric Company: *See*—
Avery, Grant D.; and Higgs, Jacob K., 4,465,976, Cl. 324-251.000.
Coleman, James H., 4,466,045, Cl. 361-277.000.
Sprenger, Walter: *See*—
Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, 4,465,798, Cl. 523-414.000.
Springer, H. Robert, to Century Electric, Inc. Interlocking frame assembly for an electric motor stator. 4,465,946, Cl. 310-42.000.
Springfix-Befestigungstechnik GmbH: *See*—
Dieckmann, Klaus, 4,465,393, Cl. 403-76.000.
Square D Company: *See*—
Zylstra, Henry J.; and Venzke, Donald R., 4,466,042, Cl. 361-115.000.
Stab, Rudolf: *See*—
Fischer, Rudolph; and Stab, Rudolf, 4,465,544, Cl. 156-548.000.
Stallings, John P., to Cabot Corporation. Nonlinear ear protecting device. 4,465,159, Cl. 181-129.000.
Stamicarbon B.V.: *See*—
de Wit, Willem; and Vermijs, Winfried J. W., 4,465,832, Cl. 544-201.000.
Standard-Knapp, Inc.: *See*—
Flanagan, Thomas L., 4,465,226, Cl. 229-32.000.
Standard Oil Company, The: *See*—
Bremer, Noel J.; and Dria, Dennis E., 4,465,846, Cl. 549-260.000.
Paspek, Stephen C., Jr., 4,465,888, Cl. 585-520.000.
Standard Oil Company, a corporation of Indiana: *See*—
Carr, Donald G.; Blonn, John M.; and Milawski, Leonard E., 4,465,792, Cl. 521-138.000.
Standard Oil Company (Indiana): *See*—
Porter, Darrell D., 4,464,993, Cl. 102-312.000.
Porter, Darrell D., 4,464,994, Cl. 102-333.000.
Schammel, Wayne P., 4,465,887, Cl. 585-517.000.
Stange, Hugo: *See*—
Baum, Burton M.; and Stange, Hugo, 4,465,834, Cl. 546-127.000.
Starline Products, Inc.: *See*—
Norton, Larry A., 4,465,418, Cl. 414-313.000.
State of Oregon: *See*—
Fontana, Peter, 4,466,067, Cl. 364-460.000.
Stauers, Olgerts, to AT&T Technologies, Inc. Method and apparatus for testing open collector electrical circuit devices. 4,465,968, Cl. 324-73.00R.
Stauffer Chemical Company: *See*—
Abramson, Alan J.; and Davis, Gershon J., 4,465,636, Cl. 260-429.00R.
Abramson, Alan J.; and Davis, Gershon J., 4,465,637, Cl. 260-429.00R.
Stauffer, Ned L.: *See*—
Tole, James M.; and Stauffer, Ned L., 4,464,961, Cl. 83-346.000.
Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., to Steck Manufacturing Co., Inc. Hinge pin removal apparatus. 4,464,819, Cl. 29-267.000.
Steck, Laurence D.: *See*—
Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,464,819, Cl. 29-267.000.
Steck Manufacturing Co., Inc.: *See*—
Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,464,819, Cl. 29-267.000.
Steck, Raymond E.: *See*—
Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,464,819, Cl. 29-267.000.
Steen, Adam: *See*—
Buhrmann, Gerardus P.; and Steen, Adam, 4,465,514, Cl. 75-60.000.
Steffen, Klaus-Dieter: *See*—
Englander, Fritz; and Steffen, Klaus-Dieter, 4,465,865, Cl. 568-436.000.
Steigman, Frederic N., to Union Carbide Corporation. Process for the transfer of refrigeration. 4,464,904, Cl. 62-52.000.
Stein Industrie: *See*—
Andro, Jean; and Charbonnel, Alain, 4,465,127, Cl. 165-81.000.
Steinegger, Hans-Rudolf, to Sulzer Brothers Limited. Exhaust gas vapor generator. 4,465,027, Cl. 122-406.00S.
Steinmuller, Jurgen: *See*—
Lang, Hermann; and Steinmuller, Jurgen, 4,465,442, Cl. 418-2.000.
Stendel, Wilhelm: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,465,682, Cl. 424-248.570.

Stephenson, Robert G., to James Howden Australia Pty. Limited. Gas cleaning installation. 4,465,498, Cl. 55-341.0NT.
Sterling Drug Inc.: *See*—
Lesher, George Y.; Opalka, Chester J., Jr.; Page, Donald F.; and McGarry, Ruthann M., 4,465,686, Cl. 424-263.000.
Sterner, Charles J.: *See*—
Herman, Stewart T.; Pfeiffer, James B.; Sewald, Richard T., Sr.; and Sterner, Charles J., 4,465,597, Cl. 210-713.000.
Stettler, Hans: *See*—
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, 4,465,516, Cl. 106-14.120.
Stinton, Robert T.: *See*—
Long, Richard W.; and Stinton, Robert T., 4,464,795, Cl. 2-2.10R.
Stoddord, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., to In Situ Technology, Inc. Minimizing subsidence effects during production of coal in situ. 4,465,401, Cl. 405-258.000.
Stoehr, Herbert M.; and Toben, John J., to Artos Engineering Company. Machine for roller forming metal louvers. 4,464,920, Cl. 72-186.000.
Stojek, Dieter, to Ford Motor Company. Carburetor with an inductor passage controlled by a throttle slide. 4,465,644, Cl. 261-44.00B.
Stokoe, Philip T.; and Gervais, Guy A., to Augat Inc. Parallel gap welder. 4,465,913, Cl. 219-56.100.
Stoll, Donald H., to General Electric Company. Method of assembling a control device. 4,464,828, Cl. 29-622.000.
Stolle Corporation, The: *See*—
Kaminski, Elton G.; and McEldowney, Carl F., 4,465,204, Cl. 220-269.000.
Stoltefuss, Jurgen: *See*—
Boshagen, Horst; Junge, Bodo; Stoltefuss, Jurgen; Schmidt, Delf; Krause, Hans P.; and Puls, Walter, 4,465,684, Cl. 424-250.000.
Stone, Thomas R.; and Penzotti, Roger P., to Paccar Inc. Vehicle suspension with load-controlled damping and load-controlled damper. 4,465,299, Cl. 280-714.000.
Stoner, Donald L., to Microperipheral Corporation, The. Data communication system. 4,466,107, Cl. 375-37.000.
Stoops, Paul M.: *See*—
Ledlow, Jimmie E.; and Stoops, Paul M., 4,465,220, Cl. 228-50.000.
Storage Technology Corporation: *See*—
Witulski, Arthur F.; and Schwickrath, Bruce R., 4,466,041, Cl. 361-93.000.
Stover, Kenneth W., to Bunn-O-Matic Corporation. Beverage making machine with hot water faucet. 4,464,981, Cl. 99-280.000.
Stoves, Derek; and Hatley, John E., to British Gas Corporation. Fluid container with venting means. 4,465,202, Cl. 220-203.000.
Strahl, David M., to King Sprout Products, Inc. High protein sprouted mung bean food mix and method of preparation. 4,465,696, Cl. 426-63.000.
Stratmann, Josef; Urbye, Claus; and Brinkmann, Willi, to Carl Still GmbH & Co. KG, Firma. Method and apparatus for controlling the volumetric charge of a coke oven furnace. 4,465,419, Cl. 414-328.000.
Straubel, Max: *See*—
Eckert, Konrad; Straubel, Max; and Vogel, Wilhelm, 4,465,049, Cl. 123-446.000.
Strauss, Kuno; and Nasner, Alice, to Lucas Meyer GmbH. Intravenously administered emulsion from a lecithin base and method of preparation. 4,465,693, Cl. 424-365.000.
Strecker, Helmut, to U.S. Philips Corporation. X-Ray examination device having a high local resolution. 4,466,113, Cl. 378-146.000.
Streeter, Robert D., to Magnavox Consumer Electronics Company. Signal processor for AM stereophonic receiving apparatus. 4,466,116, Cl. 381-15.000.
Strobel, Louise. Embroidery fabric. 4,465,007, Cl. 112-439.000.
Strubbe, Gilbert J. I., to Sperry Corporation. Impeller for rotary cleaning mechanism in combines. 4,465,082, Cl. 130-27.00E.
Strubbe, Gilbert J. I.: *See*—
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,464,887, Cl. 56-16.500.
Decoene, Frans J. G. C.; and Strubbe, Gilbert J. I., 4,465,081, Cl. 130-27.0HF.
Stubbs, Peter W. R., to BL Technology Limited. Control systems for continuously variable ratio transmissions (CVT). 4,464,952, Cl. 74-690.000.
Stultz, James, to Crosby Commercial Refrigeration Systems, Inc. Ice harvesting machine. 4,464,910, Cl. 62-320.000.
Stumm, Hans-Peter: *See*—
Denz, Helmut; and Stumm, Hans-Peter, 4,465,043, Cl. 123-327.000.
Sturgeon, Harvey H. Self-applying accessory for blood pressure cuff. 4,465,076, Cl. 128-686.000.
Suda, Shigeyuki: *See*—
Tanaka, Kazuo; and Suda, Shigeyuki, 4,465,342, Cl. 350-427.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See*—
Winterer, Wilfried, 4,465,126, Cl. 165-77.000.
Suga, Nobuhiko: *See*—
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Sugai Chemical Industry Co., Ltd.: *See*—
Hashimoto, Takeshi; Akashi, Terumasa; and Nishihara, Koji, 4,465,878, Cl. 568-730.000.
Suganuma, Kunio, to Citizen Watch Co., Ltd. Electrochromic display cell. 4,465,340, Cl. 350-357.000.
Suganuma, Nobuo: *See*—
Sato, Hiroshi; Watanabe, Haruo; and Suganuma, Nobuo, 4,465,662, Cl. 424-54.000.
Suggitt, Robert M., to Texaco Development Corporation. Removal of sour water from coal gasification slag. 4,465,496, Cl. 48-197.00R.
Sugisaki, Tetsuzo; and Morisue, Shinichi, to Dainippon Pharmaceutical Co., Ltd. Method for the treatment of systemic lupus erythematosus and primary glomerulonephritis and agent therefor. 4,465,670, Cl. 424-177.000.
Sugisaki, Tsutomu: *See*—
Miyatuka, Hajime; Kasuga, Akira; Matsufuji, Akihiro; and Sugisaki, Tsutomu, 4,465,737, Cl. 428-339.000.
Sugita, Hiroshi: *See*—
Sato, Ryosuke; Kato, Katsunori; Sasaki, Takashi; and Sugita, Hiroshi, 4,465,766, Cl. 430-552.000.
Sugiuchi, Masami; Miyamura, Masataka; and Onishi, Yasunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Organic photoconductive compositions for use in electrophotography. 4,465,752, Cl. 430-75.000.
Sulzer Brothers Limited: *See*—
Steinegger, Hans-Rudolf, 4,465,027, Cl. 122-406.00S.
Sulzer Morat GmbH: *See*—
Leiss, Eberhard; Walter, Manfred; and Gaiser, Willie, 4,464,912, Cl. 66-77.000.
Sumi, Akiyasu, to Canon Kabushiki Kaisha. Cam device for a photographing lens barrel. 4,465,344, Cl. 350-429.000.
Sumitomo Chemical Company, Limited: *See*—
Hirohara, Hideo; Yamamoto, Hidefumi; Kawano, Emiko; Hattori, Mamoru; and Yamaguchi, Hisao, 4,465,772, Cl. 435-105.000.
Saito, Kenji; and Yamachika, Hiroshi, 4,465,862, Cl. 568-379.000.
Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,465,741, Cl. 428-614.000.
Sumitomo Electric Industries, Ltd.: *See*—
Matsumoto, Atsuo, 4,465,163, Cl. 188-73.390.
Tada, Koji; Nanba, Hirokuni; Kuhara, Yoshiki; and Tatsumi, Masayoshi, 4,465,969, Cl. 324-96.000.
Summit Gas Systems Pte. Ltd.: *See*—
Anthony, Rayford G.; and Thomas, P. E., 4,465,889, Cl. 585-640.000.
Sumner, B. Carmichael. Dispenser for toilet materials. 4,465,733, Cl. 428-283.000.
Sunano, Katsuaki; and Matsuda, Yukio, to Mitsubishi Rayon Co., Ltd. Antifouling coating composition. 4,465,795, Cl. 523-122.000.
Sundberg, John D.: *See*—
Meinert, Harry M.; and Sundberg, John D., 4,465,396, Cl. 403-395.000.
Sur, Jung S. Cigarette case with detachable flap. 4,465,185, Cl. 206-264.000.
Surat, Miroslav, to Escher Wyss Aktiengesellschaft. Arrangement for controlling a controlled deflection roll. 4,464,921, Cl. 72-243.000.
Susman, Sherman; and Volin, Kenneth J., to United States of America, Energy. Super ionic conductive glass. 4,465,744, Cl. 429-191.000.
Sustek, Alvin J., Jr.; Hall, Wilbur L.; Teasdale, Thomas S.; and Wiechel, John F., to Texaco Inc. Varying temperature oil recovery method. 4,465,137, Cl. 166-272.000.
Sutch, Brian L. C. Fragile opening means for a container lid. 4,465,205, Cl. 220-276.000.
Suwa, Kyoichi: *See*—
Matsuura, Toshio; Suwa, Kyoichi; Shimizu, Hisayuki; and Tanimoto, Akikazu, 4,465,368, Cl. 356-218.000.
Suzuka, Susumu: *See*—
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, 4,465,761, Cl. 430-341.000.
Suzuki, Hideo; and Sakuma, Tsurukichi. Coupling. 4,465,097, Cl. 137-614.040.
Suzuki, Kohji: *See*—
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, 4,465,570, Cl. 204-129.000.
Suzuki, Mikiji: *See*—
Kiriyama, Satoru; and Suzuki, Mikiji, 4,465,918, Cl. 219-110.000.
Suzuki, Nobuo: *See*—
Nishihara, Toshio; Shingu, Tadashi; and Suzuki, Nobuo, 4,465,736, Cl. 428-332.000.
Suzuki, Takashi; Hashimoto, Shoichiro; Orisaku, Masami; and Nakano, Rieko, to Mitsubishi Gas Chemical Company, Inc. Process for producing p-cresol. 4,465,872, Cl. 568-803.000.
Suzuki, Yasuhito: *See*—
Takahashi, Yuji; Masaki, Hisaji; and Suzuki, Yasuhito, 4,466,006, Cl. 346-153.100.
Suzuki, Yoshiji: *See*—
Takagi, Toshihiko; Kobayashi, Yoshikazu; Arakawa, Yoshihide; Suzuki, Yoshiji; and Hara, Tsutomu, 4,466,091, Cl. 369-275.000.
Swainson, Wyn K.; and Kramer, Stephen D., to Formigraphic Engine Corporation. Three-dimensional patterned media. 4,466,080, Cl. 365-106.000.
Swander, Kenneth D., to Hadady Corp. Railroad net braking ratio valve. 4,465,323, Cl. 303-23.00R.
Swartz, Craig C., to Motorola, Inc. On-chip pressure transducer and temperature compensation circuit therefor. 4,465,075, Cl. 128-672.000.
Swihart, Terence J.: *See*—
Blizzard, John D.; and Swihart, Terence J., 4,465,805, Cl. 524-765.000.
Symons Corporation: *See*—
Schimmel, Vernon R., 4,465,257, Cl. 249-11.000.
Szebeni, Rudolf: *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.

Szekely, Jozsef: *See*—
Bajusz, Sandor; Ronai, Andras; Szekely, Jozsef; Graf, Laszlo ; and Mohai nee Nagy, Zsuzsa, 4,465,625, Cl. 260-112.50E.
Szema, Li-Chieh, to General Electric Company. Scalloped cooling of gas turbine transition piece frame. 4,465,284, Cl. 277-22.000.
Szomor nee Wundele, Maria: *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.
Szvoboda nee Kanzel, Ida: *See*—
Palosi, Endre; Korbonits, Dezso ; Kiss, Pal; Gonczy, Csaba; Heja, Gergely; Cser nee Kun, Judit; Szebeni, Rudolf; Szomor nee Wundele, Maria; and Szvoboda nee Kanzel, Ida, 4,465,855, Cl. 562-496.000.
Tada, Koji; Nanba, Hirokuni; Kuhara, Yoshiki; and Tatsumi, Masayoshi, to Sumitomo Electric Industries, Ltd. Voltage and electric field measuring device using light. 4,465,969, Cl. 324-96.000.
Tada, Satoru: *See*—
Shimada, Tatsuo; Chida, Yoshinori; and Tada, Satoru, 4,465,386, Cl. 400-121.000.
Taggart, Robert: *See*—
Jordan, Richard; Bull, William; Ciardella, Robert L.; Taggart, Robert; and Holt, Frederick R., 4,466,033, Cl. 360-99.000.
Taguchi, Noriyuki: *See*—
Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, 4,465,727, Cl. 428-138.000.
Taheri, Syde A. Needle catheter. 4,465,072, Cl. 128-348.100.
Tailby, Raymond A.: *See*—
Windsor-Smith, Claude P.; and Tailby, Raymond A., 4,464,947, Cl. 74-329.000.
Takada, Manabu: *See*—
Mori, Keiichi; Inoue, Shojiro; and Takada, Manabu, 4,465,228, Cl. 236-20.00A.
Takada, Yutaka: *See*—
Murata, Masanori; and Takada, Yutaka, 4,465,254, Cl. 248-311.200.
Takagi, Toshihiko; Kobayashi, Yoshikazu; Arakawa, Yoshihide; Suzuki, Yoshiji; and Hara, Tsutomu, to Nippon Columbia Kabushiki Kaisha. Optical record disc. 4,466,091, Cl. 369-275.000.
Takagi, Yasuo: *See*—
Shigemasa, Takashi; and Takagi, Yasuo, 4,466,054, Cl. 364-162.000.
Takahashi, Shigeo: *See*—
Mackawa, Tsukasa; Gondo, Takeshi; Takahashi, Shigeo; and Kume, Hidetoshi, 4,465,867, Cl. 568-652.000.
Takahashi, Yuji; Masaki, Hisaji; and Suzuki, Yasuhito, to Canon Kabushiki Kaisha. Recording apparatus. 4,466,006, Cl. 346-153.100.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, to Kao Soap Co., Ltd. Preparation process of 2-hydroxy-3-alkoxypropylglyceryl ether. 4,465,866, Cl. 568-618.000.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, to Kao Corporation. Process for the production of glyceryl ethers. 4,465,869, Cl. 568-672.000.
Takami, Akio: *See*—
Nagashima, Teruyoshi; Takami, Akio; and Kasugai, Akiyo, 4,465,742, Cl. 428-621.000.
Takamura, Seiji: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
Takata, Akira, to Tsudakoma Kogyo Kabushiki Kaisha. Sized warp divider for a sizing machine. 4,464,816, Cl. 28-183.000.
Takechi, Masayuki: *See*—
Tanaka, Yasuo; and Takechi, Masayuki, 4,465,673, Cl. 424-180.000.
Takeda Chemical Industries, Ltd.: *See*—
Horii, Satoshi; Fukase, Hiroshi; and Higashide, Eiji, 4,465,844, Cl. 548-546.000.
Nogami, Ikuo; Shirafuji, Hideo; and Matsumura, Shigeo, 4,465,771, Cl. 435-68.000.
Takeda, Shinso: *See*—
Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, 4,465,936, Cl. 250-484.100.
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, to Oriental Photo Industries Co., Ltd.; and Hodogaya Chemical Co., Ltd. Image-forming photosensitive composition. 4,465,761, Cl. 430-341.000.
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, to Japan Carlit Co., Ltd., The. Urea compounds and herbicidal compositions containing them. 4,465,509, Cl. 71-119.000.
Takenaga, Tooru: *See*—
Isaka, Akihiko; and Takenaga, Tooru, 4,464,969, Cl. 84-95.00R.
Takenaka, Makoto: *See*—
Mataga, Sinichiro; and Takenaka, Makoto, 4,465,579, Cl. 204-255.000.
Takenaka, Mitsuaki: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
Takenouchi, Osamu: *See*—
Tanaka, Hisami; Takenouchi, Osamu; and Kawara, Tatsuo, 4,465,753, Cl. 430-79.000.
Takeuchi, Koji; Ito, Nobuo; Abe, Masahiro; and Hirai, Kiyomiki, to Ajinomoto Company, Incorporated. Latent curing agents for epoxy resins. 4,465,830, Cl. 528-117.000.
Takeuchi, Yasuhiro: *See*—
Nishino, Atsushi; Sonetaka, Kazunori; and Takeuchi, Yasuhiro, 4,465,458, Cl. 431-208.000.
Takeuchi, Yasutomo: *See*—
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, 4,465,509, Cl. 71-119.000.
Takizawa, Hiroshi; Morita, Osamu; Oiji, Yoshimasa; and Hashimoto, Tamotsu, to Kyowa Hakko Kogyo Co., Ltd. Dibenz [b,e] oxepin derivatives. 4,465,835, Cl. 546-133.000.
Taldo, Terry J.; and Jackson, Kenneth R., to Delta Manufacturing & Sales, Inc. Method for surgically cleaning hands and arms. 4,465,522, Cl. 134-10.000.
Talonen, Timo T.: *See*—
Nermes, Esko O.; and Talonen, Timo T., 4,465,512, Cl. 75-10.00R.
Tamaki, Hiroshi; Ohtomo, Fumio; and Kimura, Kazuaki, to Tokyo Kogaku Kikai Kabushiki Kaisha. Encoder. 4,465,373, Cl. 356-374.000.
Tamura, Teizo: *See*—
Miura, Kuniaki; Shibata, Akira; Kojima, Noboru; Komatsu, Keiichi; Tamura, Teizo; Konosu, Makoto; and Moriyama, Yasuji, 4,466,026, Cl. 360-61.000.
Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Image reading apparatus having a plurality of image sensors. 4,465,939, Cl. 250-578.000.
Tan, Hong S.: *See*—
Damen, Jozef T. W.; and Tan, Hong S., 4,466,121, Cl. 382-9.000.
Tanahashi, Kenichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Address translation and generation system for an information processing system. 4,466,056, Cl. 364-200.000.
Tanaka, Hideo, to Honda Giken Kogyo Kabushiki Kaisha. Shock absorbing cam shaft driving system. 4,465,037, Cl. 123-90.310.
Tanaka, Hisami; Takenouchi, Osamu; and Kawara, Tatsuo, to Dainippon Ink and Chemicals Inc. Indoline electrophotoconductor. 4,465,753, Cl. 430-79.000.
Tanaka, Kazuo; and Suda, Shigeyuki, to Canon Kabushiki Kaisha. Zoom lens. 4,465,342, Cl. 350-427.000.
Tanaka, Masakazu; and Murayama, Ken, to Toyo Boseki Kabushiki Kaisha. Blood transfusion tubes and devices for use in contact with human blood. 4,465,480, Cl. 604-264.000.
Tanaka, Masato, to Sony Corporation. Method and apparatus for detecting an edit point on a record medium. 4,466,029, Cl. 360-72.200.
Tanaka, Motoharu: *See*—
Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, 4,466,004, Cl. 346-74.400.
Tanaka, Tomoyuki: *See*—
Konishi, Nobutake; Mori, Mutsuhiro; and Tanaka, Tomoyuki, 4,466,009, Cl. 357-30.000.
Tanaka, Yasuhinori; and Chikamasa, Hiroshi, to Fuji Photo Film Co., Ltd. Coating method. 4,465,707, Cl. 427-128.000.
Tanaka, Yasuo; and Takechi, Masayuki, to Tanaka, Yasuo; and Gakko Jojin Kinki Daigaku (Educational Foundation Kinki of University). Pentagalloylglucose antiviral composition. 4,465,673, Cl. 424-180.000.
Tanielian, Minas H., to Gould, Inc. Method and device relating to thin-film cermets. 4,465,577, Cl. 204-192.00C.
Tanimoto, Akikazu: *See*—
Matsuura, Toshio; Suwa, Kyoichi; Shimizu, Hisayuki; and Tanimoto, Akikazu, 4,465,368, Cl. 356-218.000.
Tar, Lorant, to Magyar Vagon es Gepgyar. Differential locking device with three-point support, particularly for the carriage of public vehicles. 4,464,953, Cl. 74-710.500.
Task, Harry L.; and Bates, Charles, Jr., to United States of America, Air Force. Helmet mounted telescope. 4,465,347, Cl. 350-538.000.
Tatsumi, Masayoshi: *See*—
Tada, Koji; Nanba, Hirokuni; Kuhara, Yoshiki; and Tatsumi, Masayoshi, 4,465,969, Cl. 324-96.000.
Tayter, Maya: *See*—
Dickey, Leland C.; and Tayter, Maya, 4,464,844, Cl. 34-9.000.
Dickey, Leland C.; and Tayter, Maya, 4,464,847, Cl. 34-71.000.
TDK Electronics Co., Ltd.: *See*—
Ishida, Toshihiko; Shiba, Haruo; and Sato, Takateru, 4,466,036, Cl. 360-132.000.
Teasdale, Thomas S.: *See*—
Sustek, Alvin J., Jr.; Hall, Wilbur L.; Teasdale, Thomas S.; and Wiechel, John F., 4,465,137, Cl. 166-272.000.
Teccor Electronics, Inc.: *See*—
Crockett, Charles R., 4,465,957, Cl. 318-345.00D.
Techne Corporation: *See*—
de Bruyne, Norman A., 4,465,377, Cl. 366-273.000.
Technicare Corporation: *See*—
Covic, John; and Carlson, Roland W., 4,466,112, Cl. 378-7.000.
Technicon Instruments Corporation: *See*—
Heuts, Thomas M., 4,465,775, Cl. 436-503.000.
Tecnoma: *See*—
Ballu, Patrick J., 4,465,233, Cl. 239-77.000.
Teijin Limited: *See*—
Nishihara, Toshio; Shingu, Tadashi; and Suzuki, Nobuo, 4,465,736, Cl. 428-332.000.
Teledyne Industries, Inc.: *See*—
Hardin, Jasper E., 4,464,827, Cl. 29-623.200.
Meehan, Ralph J., 4,464,918, Cl. 72-133.000.
Teledyne-Walterboro, a Division of Teledyne Industries, Inc.: *See*—
Hoyt, Harold C., Jr.; and Greene, William J., 4,465,920, Cl. 219-133.000.

Temes, Steven D.: *See*—
Boden, Richard M.; Temes, Steven D.; Tyszkiewicz, Theodore J.; and Hanna, Marie R., 4,465,863, Cl. 568-417.000.

Tempel, Ernst: *See*—
Balliello, Paolo; Erzinger, Paul; and Tempel, Ernst, 4,465,491, Cl. 8-524.000.

Tendo, Atsushi: *See*—
Muramatsu, Mutsumi; Satoh, Toshio; Sekine, Hiroyasu; and Tendo, Atsushi, 4,465,851, Cl. 560-125.000.

Tenneco Inc.: *See*—
Martini, Alfred R. G., 4,465,308, Cl. 285-177.000.

Terada, Kouji: *See*—
Horiuchi, Masato; Hatazaki, Yoshinori; and Terada, Kouji, 4,465,856, Cl. 564-206.000.

Terae, Nobuyuki; and Abe, Akira, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of an aqueous emulsion of silicone. 4,465,849, Cl. 556-450.000.

Terashima, Osamu: *See*—
Miyoshi, Hajime; Asanagi, Etsuo; and Terashima, Osamu, 4,465,518, Cl. 106-89.000.

Terbrack, William H.: *See*—
Minear, Ronald J.; Brion, Harvey F.; and Terbrack, William H., 4,465,907, Cl. 179-156.00R.

Terhorst, Gunter: *See*—
Piester, Karl H.; Eggenstein, Friedrich; and Terhorst, Gunter, 4,465,407, Cl. 405-299.000.

ter Meulen, Berend P., to Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek. Method for removing undesired components from the soil. 4,465,402, Cl. 405-264.000.

Terminal Data Corporation: *See*—
Hibbard, Earl R., 4,466,021, Cl. 358-293.000.

Terry, Edgar R.; and Hudock, Joseph A., to General Electric Company. Control of dispersion of gun systems. 4,464,975, Cl. 89-41.0SM.

Terry, Ruel C.: *See*—
Stoddord, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,465,401, Cl. 405-258.000.

Terumo Kabushiki Kaisha: *See*—
Nakamura, Hideki; Ishida, Toshinobu; and Yoshida, Takao, 4,465,487, Cl. 604-408.000.

Texaco Development Corporation: *See*—
Suggitt, Robert M., 4,465,496, Cl. 48-197.00R.

Texaco Inc.: *See*—
Brennan, Michael E.; and Speranza, George P., 4,465,793, Cl. 521-172.000.
Cuscurida, Michael; and Klein, Howard P., 4,465,858, Cl. 564-477.000.
McCoy, David R., 4,465,602, Cl. 252-8.55D.
Sustek, Alvin J., Jr.; Hall, Wilbur L.; Teasdale, Thomas S.; and Wiechel, John P., 4,465,137, Cl. 166-272.000.

Texaco Inc. (parent): *See*—
Klein, Howard P.; and Speranza, George P., 4,465,791, Cl. 521-115.000.

Texas A&M University System: *See*—
Russell, B. Don, Jr., 4,466,071, Cl. 364-492.000.

Texas Instruments Incorporated: *See*—
Baber, Samuel C.; and Porter, Vernon R., 4,465,716, Cl. 427-53.100.
Berg, Peter G., 4,465,053, Cl. 123-549.000.
Couvillon, James B., 4,466,128, Cl. 455-208.000.
Orcutt, John W.; and Hardin, Richard M., 4,465,898, Cl. 174-52.0FP.

Thermocatalytic Corporation: *See*—
Craig, Laurence B.; and Farina, Alfred J., 4,464,911, Cl. 62-476.000.

Theurer, Josef; Brunninger, Manfred; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen Industriegesellschaft mbH. Freight train. 4,465,414, Cl. 414-21.000.

Thoikol Corporation: *See*—
Bell, Frank H., 4,464,992, Cl. 102-275.000.

Thomas, P. E.: *See*—
Anthony, Rayford G.; and Thomas, P. E., 4,465,889, Cl. 585-640.000.

Thomas, Richard C.; and Fritzen, Edward L., to Upjohn Company, The. Spectinomycin compounds. 4,465,848, Cl. 549-361.000.

Thomas, William R.: *See*—
Nimke, Helmut E.; and Thomas, William R., 4,465,309, Cl. 285-373.000.

Thompson, Kenneth J.: *See*—
Rosenquist, Joel C.; Thompson, Kenneth J.; and Foster, Wayne G., 4,464,913, Cl. 66-166.000.

Thompson, Neil E. S., to Petrolite Corporation. Prevention of copper plating during chemical cleaning operations. 4,465,620, Cl. 252-545.000.

Thomsen, Peter; and Mathner, Manfred, to Sachs-Dolmar GmbH. Oil pump for hand rail chain saw machines. 4,465,440, Cl. 417-500.000.

Thomson-CSF: *See*—
Munch, Joseph, 4,466,114, Cl. 378-155.000.
Van Zanten, Francois, 4,466,011, Cl. 357-48.000.

Thornburg, David D.: *See*—
Griffith, William M.; May, Gordon H.; and Thornburg, David D., 4,465,908, Cl. 200-5.00R.

Thrap, Guy C. Programmable DC-TO-AC voltage converter. 4,466,052, Cl. 363-41.000.

Throckmorton, Peter E.: *See*—
Goel, Anil B.; and Throckmorton, Peter E., 4,465,633, Cl. 260-410.90R.

Thrun, Kenneth M.: *See*—
Bobbio, Stephen M.; Flanigan, Marie C.; and Thrun, Kenneth M., 4,465,552, Cl. 156-643.000.

Ticknor, Verne E. Gingival retraction cord. 4,465,462, Cl. 433-136.000.

Tihanyi, George; and Karwowski, Zbigniew T., to Northern Telecom Limited. Rotating latch with positive indication of latching. 4,465,328, Cl. 312-215.000.

Timofeev, Vitaly M.: *See*—
Bubelo, Vilya V.; Timofeev, Vitaly M.; Ganzhara, Vladimir I.; and Froze, Raisa M., 4,464,845, Cl. 34-18.000.

Tittel, Klaus, to Gerhard Hug GmbH. Suction drainage tube. 4,465,482, Cl. 604-280.000.

TMC Corporation: *See*—
Spitaler, Englebert; Oberleitner, Gerhard; and Nitschko, Theodor, 4,465,294, Cl. 280-612.000.

Toben, John J.: *See*—
Stoehr, Herbert M.; and Toben, John J., 4,464,920, Cl. 72-186.000.

Toda, Gyozo: *See*—
Fujita, Tsuyoshi; Taguchi, Noriyuki; Toda, Gyozo; Kuroki, Takashi; and Ishihara, Shoosaku, 4,465,727, Cl. 428-138.000.

Toepker, Dennis C.; Rodriguez, Sheila S.; and Shulman, Joel I., to Procter & Gamble Company, The. Agents for preparing cross-linked polymers and water-based paint compositions containing those agents. 4,465,810, Cl. 525-285.000.

Togawa, Fumio; and Aoyama, Shigeo, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,465,735, Cl. 428-329.000.

Tohma, Hitoshi; Kimura, Tomohiro; and Ito, Hiroshi, to Canon Kabushiki Kaisha. Cleaning device. 4,465,362, Cl. 355-15.000.

Tohoku Mikuni Kogyo Co., Ltd.: *See*—
Seino, Tadashi, 4,465,439, Cl. 417-417.000.

Tokai Rubber Industries, Ltd.: *See*—
Shiratori, Harunori; and Tsukamoto, Yoshikazu, 4,465,296, Cl. 280-668.000.

Tokuhata, Kazuo: *See*—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,465,991, Cl. 335-151.000.

Tokunaga, Michio; Kitano, Junjiro; Sagawa, Akio; Hayashi, Toshio; and Hamazato, Kazuo, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Current supply circuit. 4,465,967, Cl. 323-285.000.

Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See*—
Hata, Akio; Kake, Hiroshi; and Fujii, Noriki, 4,465,615, Cl. 252-511.000.

Tokuyama Soda Kabushiki Kaisha: *See*—
Mataga, Sinichiro; and Takenaka, Makoto, 4,465,579, Cl. 204-255.000.

Tokyo Denshi Kagaku Co., Ltd.: *See*—
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,465,553, Cl. 156-643.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Tamaki, Hiroshi; Ohtomo, Fumio; and Kimura, Kazuaki, 4,465,373, Cl. 356-374.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hashimoto, Masaru, 4,466,115, Cl. 381-11.000.
Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, 4,466,055, Cl. 364-200.000.
Masuoka, Fujio, 4,466,081, Cl. 365-218.000.
Miura, Kunihiko, 4,465,358, Cl. 355-3.00R.
Muraoka, Takao, 4,466,031, Cl. 360-97.000.
Nakagome, Hideki; and Hashimoto, Takasu, 4,464,903, Cl. 62-3.000.
Nose, Shigeru, 4,466,097, Cl. 370-112.000.
Ohba, Hiroshi; and Horino, Shigeo, 4,465,192, Cl. 209-534.000.
Sadamasa, Tetsuo; Ichikawa, Osamu; and Beppu, Tatsuro, 4,465,543, Cl. 156-542.000.
Sato, Morihiko, 4,465,653, Cl. 376-404.000.
Shigemasa, Takashi; and Takagi, Yasuo, 4,466,054, Cl. 364-162.000.
Sugiuchi, Masami; Miyamura, Masataka; and Onishi, Yasunobu, 4,465,752, Cl. 430-75.000.
Tanahashi, Kenichi, 4,466,056, Cl. 364-200.000.
Torita, Fumio, 4,464,914, Cl. 68-23.500.

Tole, James M.; and Stauffer, Ned L., to Mac Engineering & Equipment Co., Inc. Battery plate strip dividing apparatus. 4,464,961, Cl. 83-346.000.

Tominaga, Kyuichiro: *See*—
Tsuchiya, Yasunobu; and Tominaga, Kyuichiro, 4,466,085, Cl. 369-10.000.

Tominaga, Shinji, to Minolta Camera Kabushiki Kaisha. Motor-operated film driving device for camera. 4,465,351, Cl. 354-173.110.

Topich, James A.: *See*—
Dickman, John E.; Turi, Raymond A.; and Topich, James A., 4,464,824, Cl. 29-576.00E.

Toray Silicone Company, Ltd.: *See*—
Shirahata, Akihiko; and Sasaki, Shosaku, 4,465,818, Cl. 528-12.000.

Torita, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic washer. 4,464,914, Cl. 68-23.500.

Toussaint, Francois: *See*—
Laroche, Pierre; and Toussaint, Francois, 4,465,734, Cl. 428-317.100.

Toyo Boseki Kabushiki Kaisha: *See*—
Tanaka, Masakazu; and Murayama, Ken, 4,465,480, Cl. 604-264.000.

Toyoda Gosei Co., Ltd.: *See*—
Manabe, Katsuhide; Sato, Yutaka; and Muroi, Ryoichi, 4,465,715, Cl. 427-444.000.

Toyoda, Hiroaki; Kimbara, Minoru; and Nakai, Akira, to Aisin Seiki Kabushiki Kaisha. Variable contact centrifugally operated seal mechanism. 4,465,285, Cl. 277-25.000.
Toyoda, Seiichi, to Noritsu Kenkyu Center Co., Ltd. Printer. 4,465,365, Cl. 355-45.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Hasegawa, Akira, 4,465,101, Cl. 137-625.680.
Kiriyama, Satoru; and Suzuki, Mikiji, 4,465,918, Cl. 219-110.000.
Kubota, Hazime, 4,464,818, Cl. 29-252.000.
Nakamura, Norihiko; Katou, Takashi; Itoh, Takaaki; and Morino, Toshiharu, 4,465,642, Cl. 261-44.00C.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Sato, Yasuyuki; Nakamura, Norihiko; and Kobayashi, Tatsuo, 4,465,952, Cl. 313-136.000.
Shiratori, Harunori; and Tsukamoto, Yoshikazu, 4,465,296, Cl. 280-668.000.
Yamazaki, Shinichiro; Manabe, Takaki; and Kato, Toranosuke, 4,465,158, Cl. 180-271.000.
Toyoto Jidosha Kogyo Kabushiki Kaisha: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
Trebor Industries, Inc.: *See*—
Rosenthal, Robert D., 4,466,076, Cl. 364-571.000.
Treiman, Alfred A. Automated time record processing system. 4,466,078, Cl. 364-900.000.
Tremblay, Richard P.: *See*—
Conley, Richard W.; and Tremblay, Richard P., 4,465,260, Cl. 251-305.000.
Trentham Corporation: *See*—
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,465,614, Cl. 252-364.000.
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., to Trentham Corporation. Alkanolaminium carboxylate solvents for selective SO_2 absorption. 4,465,614, Cl. 252-364.000.
Trethewey, Paul M., to Burroughs Corporation. Galvo position sensor for track selection in optical data disk system. 4,466,088, Cl. 369-46.000.
Trimborn, Reiner. Electric guitar having a guitar body and a loudspeaker attached to said guitar body. 4,464,967, Cl. 84-1.160.
Trisolini, George S. Cleaning apparatus. 4,464,809, Cl. 15-260.000.
Tromeur, Jean-Francois, to Espada Anstalt, Universal Marketing. Method for manufacturing a plasma ignition device for an internal combustion engine. 4,465,916, Cl. 219-78.010.
Troutman, Lester L., to Windisch, Joseph D., a part interest. Process for enhanced oil recovery from subterranean formations. 4,465,136, Cl. 166-263.000.
Troxell, Lawrence L., Jr.: *See*—
Blust, Donald L., Sr.; Pope, Jerome J.; and Troxell, Lawrence L., Jr., 4,465,422, Cl. 414-433.000.
Tsuchiya, Yasunobu; and Tominaga, Kyuichiro, to Clarion Co., Ltd. Tape reproducing apparatus combined with a radio set. 4,466,085, Cl. 369-10.000.
Tsudakoma Kogyo Kabushiki Kaisha: *See*—
Takata, Akira, 4,464,816, Cl. 28-183.000.
Tsukamoto, Yoshikazu: *See*—
Shiratori, Harunori; and Tsukamoto, Yoshikazu, 4,465,296, Cl. 280-668.000.
Tsunesumi, Tomoko: *See*—
Murata, Mitsuhiro; and Tsunesumi, Tomoko, 4,465,380, Cl. 368-202.000.
Tsuruda, Mineo: *See*—
Oe, Takanori; Tsuruda, Mineo; Goto, Kazuhiro; and Hisadome, Masao, 4,465,681, Cl. 424-248.400.
Tsushima, Rikio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,465,664, Cl. 424-71.000.
Tsutsumi, Saburo, to Nissan Motor Company, Limited. Swirl generating arrangement for an internal combustion engine. 4,465,034, Cl. 123-306.000.
Tsuzuki, Akira; Fujita, Hiro; and Morokawa, Shigeru, to Citizen Watch Company Limited. Matrix driving method for electro-optical display device. 4,465,999, Cl. 340-784.000.
Tucker, Kenneth W.: *See*—
Juel, Leslie H.; Joo', Louis A.; and Tucker, Kenneth W., 4,465,581, Cl. 204-290.00R.
Tukada, Akira: *See*—
Takegawa, Yukio; Tukada, Akira; Suzuka, Susumu; and Endo, Nobuyoshi, 4,465,761, Cl. 430-341.000.
Turi, Raymond A.: *See*—
Dickman, John E.; Turi, Raymond A.; and Topich, James A., 4,464,824, Cl. 29-576.00E.
Turk, Stanley D.; and Drake, Charles A., to Phillips Petroleum Company. Polyamide from aralkylene diamine, dicarboxylic acid and tricarboxylic acid. 4,465,822, Cl. 528-342.000.
Turk, Stanley D.: *See*—
Drake, Charles A.; and Turk, Stanley D., 4,465,824, Cl. 528-347.000.
Turner, Robert L.; and Prusak, John J., to RCA Corporation. Apparatus for manufacturing disc record package. 4,465,453, Cl. 425-384.000.
Turner, Terence A.: *See*—
Jenkins, Leonard A.; and Turner, Terence A., 4,465,489, Cl. 8-471.000.
Turney, Mary E.: *See*—
Dennen, William M.; and Turney, Mary E., 4,465,802, Cl. 524-395.000.
Tweed, William J.: *See*—
Chappell, William A.; Tweed, William J.; and Higgins, David T., 4,464,983, Cl. 99-312.000.
Tweedy of Burnley Limited: *See*—
Ball, Kenneth M. J., 4,465,700, Cl. 426-504.000.
Tyler, Derek E.: *See*—
Dantzig, Jonathan A.; and Tyler, Derek E., 4,465,118, Cl. 164-452.000.
Tyler, Henry P., to Bendix Corporation, The. Two-stage pneumatic servomotor. 4,464,976, Cl. 91-365.000.
Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Temes, Steven D.; Tyszkiewicz, Theodore J.; and Hanna, Marie R., 4,465,863, Cl. 568-417.000.
Ube Industries Ltd.: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
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Yamagishi, Toshio; Uchiyama, Hiroaki; Itoh, Ikuo; and Imanaka, Yoshiaki, 4,465,360, Cl. 355-14.00R.
Uchiyama, Toshihiko; Yoshida, Eizo ; and Okuyama, Toshiki, to Nissan Motor Company, Limited. Process for the manufacture of polyurethane-coated products. 4,465,710, Cl. 264-46.500.
Ueda, Masatsugu: *See*—
Chiba, Hideo; Sasaki, Ryuzo; and Ueda, Masatsugu, 4,465,624, Cl. 260-112.00R.
Uehara, Akira: *See*—
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,465,553, Cl. 156-643.000.
Ueno, Haruyuki: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,465,647, Cl. 264-29.600.
Ueno, Takumi; Shiraishi, Hiroshi; Iwayanagi, Takao; Kohashi, Takahiro; and Nonogaki, Saburo, to Hitachi, Ltd. Pattern-formation method with iodine containing azide and oxygen plasma etching of substrate. 4,465,768, Cl. 430-296.000.
Uhl, Robert J., to American Standard Inc. Apparatus and method for transferring articles to and from carriers moving in a vertical path. 4,465,174, Cl. 198-361.000.
Ujihashi, Mitiaki: *See*—
Igashira, Toshihiko; Ohashi, Michihiro; Kawai, Hisasi; Nomura, Ken; Ujihashi, Mitiaki; and Iwata, Minoru, 4,465,050, Cl. 123-472.000.
UMAC, Inc.: *See*—
Nimke, Helmut E.; and Thomas, William R., 4,465,309, Cl. 285-373.000.
Umehara, Masaakira: *See*—
Oba, Hideaki; and Umehara, Masaakira, 4,465,767, Cl. 430-271.000.
UNC Navel Products, Naval Products Div.: *See*—
Nicolozakes, Basil J.; Sanders, John M.; Chiangi, Daniel P.; and Pacula, Chris M., 4,465,224, Cl. 228-222.000.
Unie van Kunstmestfabrieken B.V.: *See*—
Spijker, Ruud, 4,465,657, Cl. 423-339.000.
Union Carbide Corporation: *See*—
Akridge, James R., 4,465,745, Cl. 429-191.000.
Akridge, James R., 4,465,746, Cl. 429-191.000.
Dennen, William M.; and Turney, Mary E., 4,465,802, Cl. 524-395.000.
Evans, William P., 4,465,747, Cl. 429-194.000.
Lewis, Irwin C., 4,465,585, Cl. 208-22.000.
Selines, Ronald J.; Hagerty, Lawrence J.; and Hilty, Donald C., 4,465,513, Cl. 75-53.000.
Steigman, Frederic N., 4,464,904, Cl. 62-52.000.
Union Oil Company of California: *See*—
On, Harry P., Jr., 4,465,606, Cl. 252-56.00R.
Union Siderurgique du Nord et de l'Est de la France: *See*—
Coppe, Jacques; and Lascoux, Pierre, 4,465,086, Cl. 134-122.00R.
United Kingdom Atomic Energy Authority: *See*—
Dearnaley, Geoffrey; and Watkins, Robert E. J., 4,465,524, Cl. 148-31.500.
Lovegrove, Peter C., 4,465,583, Cl. 204-299.00R.
Mattock, Patrick; and Aitchison, Gordan F., 4,465,574, Cl. 204-180.00R.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty's Government of the: *See*—
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,465,814, Cl. 525-439.000.
U.S. Fire Control Corporation: *See*—
Johnson, Wilfred V., 4,465,141, Cl. 169-37.000.
United States of America
Agriculture: *See*—
Peterson, Donald L.; and Welker, William V., Jr., 4,464,862, Cl. 47-1.500.
Air Force: *See*—
Bekefi, George, 4,465,953, Cl. 315-39.710.
Broadwell, James E., 4,466,100, Cl. 372-89.000.
Cantu, Evangeline, 4,465,068, Cl. 128-303.00R.
Cummings, Robert J., 4,465,250, Cl. 244-122.0AG.
Geary, Joseph M., 4,465,372, Cl. 356-359.000.
Graff, Herman; and Joseph, James D., 4,465,940, Cl. 250-578.000.
Horner, Joseph L.; and Ludman, Jacques E., 4,465,332, Cl. 350-96.190.

Lang, Clifford H.; and Biss, Michael S., 4,465,253, Cl. 248-75.000.
Lang, Clifford H., 4,465,392, Cl. 403-24.000.
Milligan, Thomas A., 4,465,985, Cl. 333-116.000.
Moats, Robert R., 4,465,988, Cl. 333-156.000.
Simon, Wayne E., 4,464,972, Cl. 89-1.816.
Task, Harry L.; and Bates, Charles, Jr., 4,465,347, Cl. 350-538.000.

Army: *See—*
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Eppes, Thomas A., 4,465,335, Cl. 350-96.210.
Haas, Robert T.; and Howard, Lawrence W., 4,465,329, Cl. 312-216.000.
McDowell, Hunter L., 4,465,984, Cl. 333-81.00A.

Energy: *See—*
Chalfant, Gordon G., Jr., 4,465,201, Cl. 220-3.000.
Gibson, Albert; Haws, Lowell D.; and Mohler, Jonathan H., 4,464,989, Cl. 102-202.000.
Humphreys, Duane A., 4,465,103, Cl. 138-40.000.
Kamath, Krishna, 4,465,135, Cl. 166-261.000.
Landerman, Abraham M.; Biancardi, Frank R.; Melikian, Gorken; Meader, Maurice D.; Kepler, Charles E.; Anderson, Torger J.; and Sitler, James W., 4,464,908, Cl. 62-235.100.
Lindemeyer, Carl W., 4,464,948, Cl. 74-411.500.
Perez-Mendez, Victor; and Mulera, Terrence A., 4,465,933, Cl. 250-385.000.
Susman, Sherman; and Volin, Kenneth J., 4,465,744, Cl. 429-191.000.

Health and Human Services: *See—*
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Royce, Richard K., 4,466,003, Cl. 343-826.000.
Willard, Bernard S.; and Judd, Robert K., 4,466,083, Cl. 367-175.000.

U.S. Philips Corporation: *See—*
Gibson, Peter J., 4,465,990, Cl. 333-247.000.
Jansen, Gerardus L. M.; and Vos, Gerardus J. J., 4,466,000, Cl. 340-825.500.
Martin, Alain J., 4,466,064, Cl. 364-200.000.
Sari, Hikmet, 4,466,109, Cl. 375-86.000.
Segarra, Gerard; and Phulpin, Francois J., 4,466,063, Cl. 364-200.000.
Sorel, Alain; and Bury, Michel, 4,465,206, Cl. 221-94.000.
Strecker, Helmut, 4,466,113, Cl. 378-146.000.
van de Pas, Andries J. M.; and van den Ende, Antonius C. J., 4,465,153, Cl. 178-22.160.
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United Technologies Corporation: *See—*
Senatro, Clement A., 4,464,814, Cl. 24-279.000.

Unites States Gypsum Company: *See—*
Wendt, Alan C.; and Krakowski, David, 4,464,875, Cl. 52-481.000.

Universal Leaf Tobacco Co.: *See—*
Coleman, G. A. John, 4,465,194, Cl. 209-639.000.

University of Utah: *See—*
Nielsen, Steven D.; and Willshaw, Peter, 4,465,063, Cl. 128-1.00D.

Uno, Takashi: *See—*
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UOP Inc.: *See—*
Faschingbauer, Gerald L., 4,465,654, Cl. 423-213.500.
Firth, Bruce E.; and Rosen, Terry J., 4,465,871, Cl. 568-783.000.
Herskovits, Lily E., 4,465,870, Cl. 568-697.000.
Imai, Tamotsu, 4,465,885, Cl. 585-466.000.
Kocal, Joseph A., 4,465,874, Cl. 568-898.000.

Upjohn Company, The: *See—*
Hatfield, Richard, Jr., 4,465,639, Cl. 260-453.0PH.
Thomas, Richard C.; and Fritzen, Edward L., 4,465,848, Cl. 549-361.000.

Urata, Kouichi: *See—*
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,866, Cl. 568-618.000.
Takaishi, Naotake; Urata, Kouichi; and Inamoto, Yoshiaki, 4,465,869, Cl. 568-672.000.

Urata, Shinji: *See—*
Hirobe, Hitoshi; Enomoto, Shigeo; Minakuchi, Tadashi; and Urata, Shinji, 4,465,352, Cl. 354-406.000.

Urbaniak, Ray, to American Hospital Supply Corp. Syringe cartridge and method. 4,465,472, Cl. 604-122.000.

Urbye, Claus: *See—*
Stratmann, Josef; Urbye, Claus; and Brinkmann, Willi, 4,465,419, Cl. 414-328.000.

Urs, Venkataramaraj S.: *See—*
Lopata, Frances G.; and Urs, Venkataramaraj S., 4,465,883, Cl. 585-9.000.

USM Corporation: *See—*
Duncan, Robert J., 4,464,833, Cl. 29-718.000.
Lauckhardt, Gerhard, 4,465,216, Cl. 226-158.000.

Usui, Yoshihiro: *See—*
Konno, Kazuhiko; Goh, Atsushi; Usui, Yoshihiro; and Ikeda, Kaoru, 4,465,507, Cl. 71-98.000.

USV Pharmaceutical Corporation: *See—*
Huang, Fu-chih; Jones, Howard; and Chan, Wan-Kit, 4,465,679, Cl. 424-244.000.

Val, George. Installation for storing and transporting elongated objects. 4,465,313, Cl. 294-67.0DA.

Valeo: *See—*
Chatelin, Jean-Pierre, 4,465,267, Cl. 267-161.000.
Jacquet, Maurice; and Boidet, Jacques, 4,465,124, Cl. 165-67.000.
Leroy, Pierre; and Pilache, Michel, 4,465,796, Cl. 523-153.000.

Valeo SA: *See—*
Marchisio, Aldo, 4,465,170, Cl. 192-48.700.

Valeron Corporation, The: *See—*
Zweekly, Raymond T., 4,465,412, Cl. 407-114.000.

van den Ende, Antonius C. J.: *See—*
van de Pas, Andries J. M.; and van den Ende, Antonius C. J., 4,465,153, Cl. 178-22.160.

van de Pas, Andries J. M.; and van den Ende, Antonius C. J., to U.S. Philips Corporation. Method of coding and decoding messages. 4,465,153, Cl. 178-22.160.

van de Plassche, Rudy J.; and Dijkmans, Eise C., to U.S. Philips Corporation. Tapped integrated resistor. 4,466,013, Cl. 357-51.000.

van der Lely, Ary; Bom, Cornelis J. G.; and Kuipers, Arie, to C. Van der Lely N.V. Tractor with ground rotated member and driven wheel revolution counters and implement lift means operatively connected thereto. 4,465,142, Cl. 172-7.000.

van der Lely, Ary; and Rom, Cornelis J. G., to C. van der Lely N.V. Weight indicator for material container of agricultural distributing device. 4,465,211, Cl. 222-166.000.

van der Lely, Cornelis. Rotary harrows. 4,465,143, Cl. 172-49.500.

van Doorne, Erven Dr. Hubertus Josephus: *See—*
Van Doorne, Hubertus J., deceased, 4,464,954, Cl. 74-752.00E.

Van Doorne, Hubertus J., deceased (Doorne, van, Heir; by Martinus P. J. H.), to van Doorne, Erven Dr. Hubertus Josephus. Automatic transmission. 4,464,954, Cl. 74-752.00E.

Van Ginkel, Mannes; and Van 'T Slot, Kornelis, to Moba Holdings. Device for packing a fowl. 4,464,882, Cl. 53-530.000.

Vanlerberghe, Guy; and Sebag, Henri, to Societe Anonyme dite: L'Oreal. Polyoxyethyleneated non-ionic surface-active agents with two lipophilic chains. 4,465,860, Cl. 568-37.000.

Van Sweringen, James P.: *See—*
Patel, Jhina; and Van Sweringen, James P., 4,465,238, Cl. 239-590.300.

Van 'T Slot, Kornelis: *See—*
Van Ginkel, Mannes; and Van 'T Slot, Kornelis, 4,464,882, Cl. 53-530.000.

Van Tilburg, Herman B.: *See—*
Roepers, Harry F.; and Van Tilburg, Herman B., 4,464,960, Cl. 83-104.000.

Van Zanten, Francois, to Thomson-CSF. Device for protection against leakage currents in integrated circuits. 4,466,011, Cl. 357-48.000.

Varco International, Inc.: *See—*
Boyadjieff, George I.; and Campbell, Andrew B., 4,465,131, Cl. 166-77.000.

Vaseen, Vesper A.: *See—*
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Vaterlaus, Arthur, to Concast Service Union AG. Method and apparatus for bending a strand in a continuous casting installation for metals, especially steel. 4,465,121, Cl. 164-484.000.

Vaughn, Thomas D.: *See—*
Bollinger, Steven R.; and Vaughn, Thomas D., 4,465,045, Cl. 123-360.000.

Veb Kombinat Fortschritt Landmaschinen: *See—*
Scholtissek, Georg; and Grohmann, Peter, 4,464,890, Cl. 56-364.000.

Veda, Inc.: *See—*
Buschbom, Floyd E.; and Hansen, Glen D., 4,465,409, Cl. 406-59.000.

Veeco Instruments Inc.: *See—*
Westerberg, Eugene R.; and Brodie, Ivor, 4,465,934, Cl. 250-398.000.

Veith, Gustav G., to Gustav Georg Veith GmbH & Co., KG. Conveyor apparatus. 4,464,996, Cl. 104-172.00S.

Vendetti, Randall P.: *See—*
Kashmer, James S.; Klimbach, John K.; and Vendetti, Randall P., 4,465,485, Cl. 604-320.000.

Venner, Joe G.: *See—*
Diefendorf, Russell J.; and Venner, Joe G., 4,465,586, Cl. 208-45.000.

Venzke, Donald R.: *See—*
Zylstra, Henry J.; and Venzke, Donald R., 4,466,042, Cl. 361-115.000.

Vermijs, Winfried J. W.: *See—*
de Wit, Willem; and Vermijs, Winfried J. W., 4,465,832, Cl. 544-201.000.

Vermont Stove Company, Inc.: *See—*
Bortz, Paul B., 4,465,055, Cl. 126-123.000.

Verner, Dalton R.; and Heath, Donald L., to ECD-ANR Energy Conversion Company. Thermoelectric devices having improved elements and element interconnects and method of making same. 4,465,895, Cl. 136-225.000.

Versaggi, Gina; and St. Germain, Anthony. Noninvasive seal for a sucking chest wound. 4,465,062, Cl. 128-1.00R.

Vial, Christian: *See—*
Schreiber, Jean-Pierre; and Vial, Christian, 4,465,403, Cl. 405-267.000.

Viceps-Madore, Dace: *See—*
Cidlowski, John A.; and Viceps-Madore, Dace, 4,465,776, Cl. 436-504.000.

Victor Company of Japan, Ltd.: *See—*
Ono, Tsuyoshi; and Oono, Fumiaki, 4,466,086, Cl. 369-32.000.

Onoye, Hideo, 4,464,968, Cl. 84-1.280.
Ota, Yoshihiko, 4,466,022, Cl. 358-330.000.
Virr, Michael J. Fluidized bed retrofit boiler. 4,465,022, Cl. 122-4.00D.
Vitale, Steven. Valve with anti-removal feature. 4,465,092, Cl. 137-328.000.
Vock, Manfred H.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; and Zampino, Michael J., 4,465,695, Cl. 426-3.000.
Voest-Alpine Aktiengesellschaft: *See*—
Baumann, Erich; Eisenkolb, Klaus; and Morawietz, Werner, 4,465,417, Cl. 414-235.000.
Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, 4,465,557, Cl. 202-241.000.
Brettbacher, Franz; Moshammer, Karl; Rom, Ernst; and Hirschmanner, Franz, 4,465,912, Cl. 219-10.49A.
Nagl, Martin, 4,465,592, Cl. 209-236.000.
Voetsch, Harold E.: *See*—
Boyce, Clarence A., Jr.; and Voetsch, Harold E., 4,465,411, Cl. 407-28.000.
Vogel, Victor J.; and Morano, Robert E., to American Standard Inc. Pneumatically-propelled carrier system. 4,465,410, Cl. 406-111.000.
Vogel, Wilhelm: *See*—
Eckert, Konrad; Straubel, Max; and Vogel, Wilhelm, 4,465,049, Cl. 123-446.000.
Voisine, Leo G., to Alpha Couplings, Inc. Fluid valve coupling. 4,465,096, Cl. 137-614.040.
Volin, Kenneth J.: *See*—
Susman, Sherman; and Volin, Kenneth J., 4,465,744, Cl. 429-191.000.
Voll, Werner: *See*—
Eberling, Richard; and Voll, Werner, 4,465,415, Cl. 414-122.000.
Volz, William E.: *See*—
Kan, Peter T.; Schaaf, Robert L.; Medaugh, Lewis N.; and Volz, William E., 4,465,638, Cl. 260-453.0SP.
von Criegern, Rolf; and Weitzel, Ingo, to Siemens Aktiengesellschaft. Electrically conductive sample support-mounting for secondary ion mass spectrometer analysis. 4,465,935, Cl. 250-440.100.
von der Eltz, Hans-Ulrich, to Hoechst Aktiengesellschaft. Process for the continuous dyeing of fabric webs-fixing with steam/air mixture. 4,465,490, Cl. 8-400.000.
Vos, Gerardus J. J.: *See*—
Jansen, Gerardus L. M.; and Vos, Gerardus J. J., 4,466,000, Cl. 340-825.500.
Vosper, George W. Construction of low water level sensing device for hot water boiler. 4,465,088, Cl. 137-1.000.
Vought Corporation: *See*—
Shuford, David M., 4,465,777, Cl. 501-88.000.
W. R. Grace & Co.: *See*—
Lin, Shiow-Ching, 4,465,825, Cl. 528-367.000.
Wachi, Shigeaki, to Sony Corporation. Information signal reproducing apparatus. 4,466,089, Cl. 369-59.000.
Wagner, William R., to Rockwell International Corporation. Programmed combustion steam generator. 4,465,023, Cl. 122-6.00A.
Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Hanger device for trolley conveyor. 4,464,998, Cl. 105-148.000.
Wakatsuki, Susumu: *See*—
Saitoh, Toshio; Wakatsuki, Susumu; Kojima, Heiichiro; and Asaka, Noboru, 4,465,271, Cl. 271-227.000.
Walker Equipment Corporation: *See*—
Walker, Wesley F., Jr.; and Hanon, David, 4,466,120, Cl. 381-109.000.
Walker, Thad O.: *See*—
Peiffer, Dennis G.; Lundberg, Robert D.; and Walker, Thad O., 4,465,801, Cl. 524-389.000.
Walker, Wesley F., Jr.; and Hanon, David, to Walker Equipment Corporation. Telephone handset amplifier circuit. 4,466,120, Cl. 381-109.000.
Walter, Manfred: *See*—
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Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, to Hoechst Aktiengesellschaft. Water-dilutable epoxide, process for preparing it, the use thereof and a coating composition. 4,465,798, Cl. 523-414.000.
Walzel, Leopold, to Mannesmann Aktiengesellschaft. Metallurgical plant. 4,466,104, Cl. 373-78.000.
Waniczek, Helmut; Bartl, Herbert; and Kruger, Klaus, to Bayer Aktiengesellschaft. Ignition improvers for internal combustion engines. 4,465,028, Cl. 123-1.00A.
Wargo, Robert A.; and Perlman, Stuart S., to RCA Corporation. Automatic color burst magnitude control for a digital television receiver. 4,466,015, Cl. 358-27.000.
Warman International Limited: *See*—
Gugger, Hans; and Ackland, John, 4,465,144, Cl. 173-28.000.
Warner-Lambert Company: *See*—
Bowman, Peter; and Frieze, Allan S., 4,464,835, Cl. 30-84.000.
Warren Rupp Company, The: *See*—
Rupp, Warren E., 4,465,102, Cl. 137-849.000.
Watanabe, Haruo: *See*—
Ichiryu, Ken; Watanabe, Haruo; and Nemoto, Masami, 4,464,978, Cl. 91-459.000.
Sato, Hiroshi; Watanabe, Haruo; and Suganuma, Nobuo, 4,465,662, Cl. 424-54.000.
Watanabe, Kiyoshi, to Foundation: The Research Institute of Electric and Magnetic Alloys, The. High-coercive-force permanent magnet with a large maximum energy product and a method of producing the same. 4,465,526, Cl. 148-101.000.
Watanabe, Kunitoshi: *See*—
Iuchi, Tohru; Watanabe, Kunitoshi; Shibata, Toshihiko; and Kawamura, Tetsuro, 4,465,382, Cl. 374-9.000.
Watanabe, Masanori: *See*—
Sekioka, Hakobu; Takenaka, Mitsuaki; Kawaguchi, Yoshio; Takamura, Seiji; Nishimura, Minoru; and Watanabe, Masanori, 4,465,503, Cl. 71-88.000.
Watanuki, Toshiro: *See*—
Takematsu, Tetsuo; Takeuchi, Yasutomo; Kohno, Michiyuki; Aoki, Akihiko; Aoki, Nobuo; Watanuki, Toshiro; and Moriya, Koichi, 4,465,509, Cl. 71-119.000.
Watkins, Bruce J., to Hughes Tool Company. Tie-back connection apparatus and method. 4,465,134, Cl. 166-245.000.
Watkins, Robert E. J.: *See*—
Dearnaley, Geoffrey; and Watkins, Robert E. J., 4,465,524, Cl. 148-31.500.
Watts, David E.; and Winters, Robert W., to MTS Systems Corporation. Extensometer readout circuit. 4,464,937, Cl. 73-772.000.
Wavin B.V.: *See*—
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Wawro, Thaddeus J.; and Wright, Timothy A., to Carrier Corporation. Assembly for securing filter channels to support structure in a casing such as the housing of an air handling unit and for selectively providing flanges for securing a duct to the casing. 4,465,499, Cl. 55-481.000.
Weber, Joseph A., to Gustafson, Inc. Metering device for liquid treatments. 4,465,016, Cl. 118-303.000.
Weber, Lothar; Wojtek, Friedhelm; and Schwarzbach, Horst, to Klockner-Werke Aktiengesellschaft. Method and device for fabricating insulated joints for railroad tracks. 4,464,831, Cl. 29-825.000.
Weelink, Johannes M. W. Baling machine employing a rotary feeding and compressing device. 4,464,889, Cl. 56-341.000.
Weil, Joachim: *See*—
Giller, Arnold; and Weil, Joachim, 4,465,807, Cl. 525-135.000.
Weilbacher, Eugene E., to Snyder Laboratories, Inc. Modular drainage apparatus. 4,465,483, Cl. 604-317.000.
Weill, Jerome: *See*—
Denis, Jacques; Weill, Jerome; and Rojey, Alexandre, 4,465,609, Cl. 252-67.000.
Weingarten, Zvi. Sleeve valves. 4,465,258, Cl. 251-5.000.
Weiss, Roger, to Moulinex, Societe Anonyme. Floor mop. 4,464,807, Cl. 15-119.00A.
Weitzel, Ingo: *See*—
von Criegern, Rolf; and Weitzel, Ingo, 4,465,935, Cl. 250-440.100.
Welch, John T., to Du Pont de Nemours, E. I., and Company. Herbicidal N-[heterocyclicaminocarbonyl]-1H-indene and tetrahydronaphthalene sulfonamides. 4,465,506, Cl. 71-92.000.
Welding Engineers, Inc.: *See*—
Adderley, Thomas E., Jr., 4,465,451, Cl. 425-145.000.
Welker, William V., Jr.: *See*—
Peterson, Donald L.; and Welker, William V., Jr., 4,464,862, Cl. 47-1.500.
Wellner, Wolfgang; Pedain, Josef; and Gruber, Hermann, to Bayer Aktiengesellschaft. Catalyst systems containing an organic disulfide carboxylates and/or organic complex compounds of metals, and basic amines for the oxidative hardening of plastics precursors containing mercapto groups. 4,465,826, Cl. 528-374.000.
Welp, Ewald G., to Jagenberg AG. Method for the shaftless winding of a web. 4,465,243, Cl. 242-66.000.
Wemhoff, Mark F., to Environmental Technology (U.S.), Inc. Recovery of metal from waste water by chemical precipitation. 4,465,593, Cl. 210-96.100.
Wendt, Alan C.; and Krakowski, David, to Unites States Gypsum Company. Wall panel bracing rib and wall constructed therewith. 4,464,875, Cl. 52-481.000.
Werner, Lawrence E., to Chrysler Corporation. Tuned bumper mounting system. 4,465,312, Cl. 293-132.000.
West, Donald W.: *See*—
Manning, Patrick R.; and West, Donald W., 4,465,078, Cl. 128-759.000.
Westerberg, Eugene R.; and Brodie, Ivor, to Veeco Instruments Inc. Parallel charged particle beam exposure system. 4,465,934, Cl. 250-398.000.
Westerberg, Gerhard. Method and device for inspecting micromask patterns. 4,465,350, Cl. 354-4.000.
Westinghouse Electric Corp.: *See*—
Baron, Moshe I.; and Kossowsky, Ram, 4,465,337, Cl. 350-164.000.
Kirschbaum, Herbert S., 4,465,962, Cl. 318-817.000.
Loh, Koon W.; and Emtage, Peter R., 4,465,986, Cl. 333-148.000.
Martin, Harry F.; and Schlatter, Martin E., 4,465,429, Cl. 415-116.000.
Wootton, Roy E., 4,465,896, Cl. 174-28.000.
Yoldas, Bulent E., 4,465,739, Cl. 428-432.000.
Westley, Martin J. Article storage and retrieval assembly. 4,465,327, Cl. 312-11.000.
Whipple, Bruce A.; and Dunn, Victor S., to RCA Corporation. Method for preparing a molding composition. 4,465,617, Cl. 252-511.000.
Whitfield, Robert L. Golf practice mat. 4,465,281, Cl. 273-186.00R.
Whitley, George J.; and Rayl, Martin, to RCA Corporation. Component lead bending apparatus. 4,464,829, Cl. 29-741.000.
Widmer, Erich: *See*—
Grass, Hansjorg; and Widmer, Erich, 4,465,567, Cl. 204-75.000.
Wiechel, John F.: *See*—
Sustek, Alvin J., Jr.; Hall, Wilbur L.; Teasdale, Thomas S.; and Wiechel, John F., 4,465,137, Cl. 166-272.000.

Wiehn, Helmut: *See*—
Richter, Robert; Wiehn, Helmut; and Lichtenberger, Horst, 4,465,021, Cl. 122-4.00D.

Wiesendanger, Walter: *See*—
Lukas, Bohumir; Wiesendanger, Walter; and Schmidt-Ruppin, Karl H., 4,465,666, Cl. 424-145.000.

Wilder, Paul R., to Dover Corporation. Information center for gasoline dispensing nozzle. 4,465,209, Cl. 222-23.000.

Wilensky, Barry F.; and Maggi, Joseph A., to Allied Corporation. Video test method and apparatus with incremental scan rate capability. 4,466,014, Cl. 358-10.000.

Willard, Bernard S.; and Judd, Robert K., to United States of America, Navy. Low frequency, broadband, underwater sound transducer. 4,466,083, Cl. 367-175.000.

Williams International Corporation: *See*—
Rourk, George W., 4,465,434, Cl. 416-230.000.

Williams, James O.: *See*—
Joseph, Brian J.; and Williams, James O., 4,465,356, Cl. 355-3.0DD.

Williams, John P.: *See*—
Buer, Jeffrey J.; and Williams, John P., 4,465,195, Cl. 209-704.000.

Willis, William M., to Willis, William M., Sr.; Willis, William M., Jr.; and Schwarz, Jerry W., a part interest. Tire cap pressure gauge. 4,464,929, Cl. 73-146.800.

Willis, William M., Jr.: *See*—
Willis, William M., 4,464,929, Cl. 73-146.800.

Willis, William M., Sr.: *See*—
Willis, William M., 4,464,929, Cl. 73-146.800.

Willshaw, Peter: *See*—
Nielsen, Steven D.; and Willshaw, Peter, 4,465,063, Cl. 128-1.00D.

Wilson, Eric M.; and Bullock, Geoffrey N., to Aur Hydropower Limited. Water engine. 4,465,941, Cl. 290-54.000.

Wilson, Gary L.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,465,009, Cl. 114-56.000.

Wilson, Richard A.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; and Zampino, Michael J., 4,465,695, Cl. 426-3.000.

Wind, Kurt: *See*—
Ebert, Heinrich; Noe, Manfred; Wind, Kurt; and Bitsch, Gunter, 4,464,850, Cl. 36-44.000.

Windisch, Joseph D.: *See*—
Troutman, Lester L., 4,465,136, Cl. 166-263.000.

Windischmann, Henry: *See*—
Duly, Dawn L.; Windischmann, Henry; and Buckley, W. D., 4,465,759, Cl. 430-321.000.

Windsor-Smith, Claude P.; and Tailby, Raymond A. Drive transmissions. 4,464,947, Cl. 74-329.000.

Wingen, Rainer; Horn, Klaus; and Lutz, Walter, to Hoechst Aktiengesellschaft. 1,3-Diaza-9-thia-anthracene-2,4-diones and photopolymerizable mixtures containing same. 4,465,758, Cl. 430-288.000.

Winterer, Wilfried, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Heat exchanger arrangement, especially for radiators for motor vehicles. 4,465,126, Cl. 165-77.000.

Winters, Robert W.: *See*—
Watts, David E.; and Winters, Robert W., 4,464,937, Cl. 73-772.000.

Wirth, Thaddaus: *See*—
Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, 4,465,798, Cl. 523-414.000.

Wissing, William K.: *See*—
Nelson, Jordan R.; Wissing, William K.; and Dunn, Victor S., 4,465,616, Cl. 252-511.000.

Wissler, Josef H.; and Schaper, Wolfgang, to Max-Planck Gesellschaft zur Forderung der Wissenschaften e.V. Angiotropins of leukocytes and inflamed tissue, process for their biotechnical preparation, and pharmaceutical compositions thereof. 4,465,669, Cl. 424-177.000.

Withers, James C.: *See*—
Cambridge, Edward L.; Loutfy, Raouf O.; and Withers, James C., 4,465,659, Cl. 423-495.000.
Loutfy, Raouf O.; and Withers, James C., 4,465,566, Cl. 204-67.000.

Wittman, Robert H.; Adkins, David E.; and Haws, Ronnie E., to Hughes Tool Company. Pressure energized pipeline plug. 4,465,104, Cl. 138-89.000.

Witulski, Arthur F.; and Schwickrath, Bruce R., to Storage Technology Corporation. Fault protection system for power supplies that use ferro-resonant transformers. 4,466,041, Cl. 361-93.000.

Wojciechowski, Piotr S.: *See*—
Okamoto, Yoshiyuki; and Wojciechowski, Piotr S., 4,465,845, Cl. 549-30.000.

Wojtek, Friedhelm: *See*—
Weber, Lothar; Wojtek, Friedhelm; and Schwarzbach, Horst, 4,464,831, Cl. 29-825.000.

Wolber, Robert: *See*—
Maurer, Roland; Wolber, Robert; Obergfell, Walter; and Flaig, Hans, 4,465,378, Cl. 368-88.000.

Wolbrink, David W.; Jonas, Kenneth J.; Butt, Roland E.; and Busch, Robert W., to Broan Mfg. Co., Inc. Mounting device for range hoods. 4,465,256, Cl. 248-544.000.

Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,465,505, Cl. 71-92.000.

Wolff, Gunter: *See*—
Dworak, Wilhelm; Rustige, Hayno; and Wolff, Gunter, 4,465,444, Cl. 418-132.000.

Woltersdorf, Otto W., Jr.: *See*—
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 4,465,850, Cl. 560-053.000.

Won, Vann Y. Atomization/distillation system. 4,465,559, Cl. 203-90.000.

Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., to Wood Manufacturing Co. Vee type planing hull for small power boats. 4,465,009, Cl. 114-56.000.

Wood Manufacturing Co.: *See*—
Wood, Forrest L.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 4,465,009, Cl. 114-56.000.

Wood, Prentice J., to Mead Corporation, The. Article carrier. 4,465,181, Cl. 206-188.000.

Woodstream Corporation: *See*—
Holden, John; and Green, Milton J., 4,464,856, Cl. 43-18.500.

Wootton, Roy E., to Westinghouse Electric Corp. Filamentary tensioned insulating support for a high voltage conductor and method of making same. 4,465,896, Cl. 174-28.000.

Worrell, Robert V.: *See*—
Morris, John F.; and Worrell, Robert V., 4,465,148, Cl. 175-329.000.

Woste, Ludger H., to Lexel Corporation. Modular dye laser. 4,466,102, Cl. 372-53.000.

Woten, Homer G. Feeder assembly for insulation blowing machines. 4,465,239, Cl. 241-98.000.

Wright, Bill R. Current cork. 4,464,858, Cl. 43-43.130.

Wright, Timothy A.: *See*—
Wawro, Thaddeus J.; and Wright, Timothy A., 4,465,499, Cl. 55-481.000.

Wu, Pai-Chuan: *See*—
Cancio, Leopoldo V.; and Wu, Pai-Chuan, 4,465,729, Cl. 428-167.000.

Wu, Suxing: *See*—
Brook, Richard J.; and Wu, Suxing, 4,465,778, Cl. 501-104.000.

Wurst, John W., to Singer Company, The. Method of forming an eyelet end buttonhole pattern. 4,465,004, Cl. 112-264.100.

Wylie, Earvin T.; and Wylie, Ruth E. Boat launching dolly. 4,465,291, Cl. 280-47.13B.

Wylie, Ruth E.: *See*—
Wylie, Earvin T.; and Wylie, Ruth E., 4,465,291, Cl. 280-47.13B.

Xerox Corporation: *See*—
Cheng, David, 4,466,087, Cl. 369-45.000.
Connell, G. A. Neville; and Mansuripur, Masud, 4,466,035, Cl. 360-114.000.
O'Connell, Patrick A., 4,466,020, Cl. 358-293.000.

Yackiw, Charles, to Schlegel Corporation. Weatherstripping in a double-hung window. 4,464,864, Cl. 49-404.000.

Yajima, Torao, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Step motor drive control. 4,465,959, Cl. 318-696.000.

Yamachika, Hiroshi: *See*—
Saito, Kenji; and Yamachika, Hiroshi, 4,465,862, Cl. 568-379.000.

Yamagishi, Toshio; Uchiyama, Hiroaki; Itoh, Ikuo; and Imanaka, Yoshiaki, to Sharp Kabushiki Kaisha. Electrophotographic copying machine. 4,465,360, Cl. 355-14.00R.

Yamaguchi, Chiyomi: *See*—
Kiriyama, Takashi; and Yamaguchi, Chiyomi, 4,465,648, Cl. 264-30.000.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for combustion engines. 4,465,047, Cl. 123-425.000.

Yamaguchi, Hisao: *See*—
Hirohara, Hideo; Yamamoto, Hidefumi; Kawano, Emiko; Hattori, Mamoru; and Yamaguchi, Hisao, 4,465,772, Cl. 435-105.000.

Yamaguchi, Kiyoshi: *See*—
Nobuhara, Masahiro; Yamaguchi, Kiyoshi; and Mochida, Ei, 4,465,622, Cl. 260-112.00R.

Yamaguchi, Yukiharu: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; Yamaguchi, Yukiharu; and Ono, Saichi, 4,465,827, Cl. 536-18.600.

Yamahara, Shinichi, to Aisin Seiki Kabushiki Kaisha. Vehicle height control apparatus. 4,465,297, Cl. 280-711.000.

Yamamoto, Hidefumi: *See*—
Hirohara, Hideo; Yamamoto, Hidefumi; Kawano, Emiko; Hattori, Mamoru; and Yamaguchi, Hisao, 4,465,772, Cl. 435-105.000.

Yamanaka, Shigeru: *See*—
Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamanaka, Shigeru, 4,465,631, Cl. 260-239.100.

Yamanaka, Shizuo: *See*—
Kinjo, Tetsuo, 4,465,391, Cl. 401-230.000.

Yamane, Ken, to Nissan Motor Company, Limited. Exhaust manifold for an internal combustion engine provided with a turbocharger. 4,464,897, Cl. 60-313.000.

Yamashita, Yoshihiko: *See*—
Saihara, Yasuhiro; Kishimoto, Takashi; Masamoto, Kiyouji; Hirao, Shozo; Murakami, Takeru; and Yamashita, Yoshihiko, 4,465,539, Cl. 156-250.000.

Yamatsuta, Kohji; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Fiber-reinforced metal composite material. 4,465,741, Cl. 428-614.000.

Yamazaki, Isamu: *See*—
Kinoshita, Tsuneo; Sato, Fumitaka; and Yamazaki, Isamu, 4,466,055, Cl. 364-200.000.

Yamazaki, Shinichiro; Manabe, Takaki; and Kato, Toranosuke, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Safety device for vehicle seat with vibrator. 4,465,158, Cl. 180-271.000.

Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, to Hitachi, Ltd. Heat storage material. 4,465,611, Cl. 252-70.000.

Yanagisawa, Hifumi: *See*—
Sakuma, Shinzo; Yanagisawa, Hifumi; Tokuhata, Kazuo; and Miyagawa, Hiroshi, 4,465,991, Cl. 335-151.000.

Yano, Takashi: *See*—
Kobayashi, Hiroshi; Tanaka, Motoharu; Machida, Hajime; Yano, Takashi; and Hwang, Uee Myong, 4,466,004, Cl. 346-74.400.

Yasuda, Naohiko; Iwagami, Hisao; Nakanishi, Eiji; Sasaki, Yukio; and Yamasaka, Shigeru, to Ajinomoto Company, Incorporated. 5-Substituted-3-iaoxazolecarboxylic acid derivatives. 4,465,631, Cl. 260-239.100.

Yasuhara, Seishi, to Nissan Motor Company, Limited. Electrically controlled fuel injection pump for an internal combustion engine. 4,465,044, Cl. 123-357.000.

Yasuno, Yoshitake: *See*—
Ishiguro, Hideharu; Takeda, Shinso; Nomura, Yukihiro; and Yasuno, Yoshitake, 4,465,936, Cl. 250-484.100.

Yazawa, Junichi, to Ricoh Company, Ltd. Small-size telescopic lens. 4,465,345, Cl. 350-455.000.

Yilmaz, Hulusi: *See*—
Peters, Hartmut; and Yilmaz, Hulusi, 4,464,880, Cl. 53-493.000.

Yin, Patrick, to LSI Logic Corporation. Tri-state CMOS driver having reduced gate delay. 4,465,945, Cl. 307-473.000.

Yokohama Kiko Co., Ltd.: *See*—
Senaha, Susumu; Chiba, Tetsuya; Ohno, Akira; and Katayama, Shitomi, 4,465,711, Cl. 427-379.000.

Yokota, Satoru, to Mitsubishi Denki Kabushiki Kaisha. Elevator drive apparatus using a traction-type speed change gear. 4,465,162, Cl. 187-29.00R.

Yoldas, Bulent E., to Westinghouse Electric Corp. Substrates coated with aluminum oxide solutions. 4,465,739, Cl. 428-432.000.

Yoneda, Masahiro: *See*—
Arima, Hideaki; Nishimura, Tadashi; Yoneda, Masahiro; Fukumoto, Takaaki; and Hirata, Yoshihiro, 4,465,529, Cl. 148-188.000.

Yonemoto, Akira: *See*—
Kidowaki, Yoshimasa; and Yonemoto, Akira, 4,465,119, Cl. 164-457.000.

Yorucu, Huseyin: *See*—
Sale, Frank R.; and Yorucu, Huseyin, 4,465,511, Cl. 75-0.50B.

Yoshida, Eizo : *See*—
Uchiyama, Toshihiko; Yoshida, Eizo ; and Okuyama, Toshiki, 4,465,710, Cl. 264-46.500.

Yoshida, Hideo, to Nihon Plast Co., Ltd. Bellows actuator. 4,464,980, Cl. 92-34.000.

Yoshida, Masaaki; and Kataoka, Hiroyuki, to Canon Kabushiki Kaisha. Electronic flash device. 4,465,353, Cl. 354-415.000.

Yoshida, Shigeru; Osabe, Akira; and Hoashi, Takayuki, to Canon Kabushiki Kaisha; and Canon Denshi Kabushihi Kaisha. Recording reproducing apparatus. 4,466,037, Cl. 360-133.000.

Yoshida, Takao: *See*—
Nakamura, Hideki; Ishida, Toshinobu; and Yoshida, Takao, 4,465,487, Cl. 604-408.000.

Yoshida, Yoshinori; and Shinohara, Hironobu, to Japan Synthetic Rubber Co., Ltd. Method for isomerizing diacetoxybutenes. 4,465,853, Cl. 560-262.000.

Yoshimura, Hirofumi; Ishii, Mitsuo; Sawatani, Tadashi; and Minamino, Shigeru, to Nippon Steel Corporation. Ferritic stainless steel having excellent formability. 4,465,525, Cl. 148-37.000.

Yoshimura, Hisashi, to Sharp Kabushiki Kaisha. Air bubble removing system in a printer head of an ink jet system printer of the ink on demand type. 4,466,005, Cl. 346-140.00R.

Yoshitomi Pharmaceutical Industries Ltd.: *See*—
Oe, Takanori; Tsuruda, Mineo; Goto, Kazuhiro; and Hisadome, Masao, 4,465,681, Cl. 424-248.400.

Yotsuya, Motoo: *See*—
Ishikawa, Katsuhiko; Kawasaki, Yoshitaka; and Yotsuya, Motoo, 4,465,457, Cl. 431-201.000.

Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. System and method for calculating a light information value. 4,465,354, Cl. 354-426.000.

Yuasa, Yoshio; and Kawagoe, Nobukazu, to Minolta Camera Kabushiki Kaisha. Light measuring device. 4,465,370, Cl. 356-224.000.

Yuen, Maria J.: *See*—
Fanucci, Ronald E.; and Yuen, Maria J., 4,465,708, Cl. 427-163.000.

Yukiyoshi, Atsushi: *See*—
Kawamura, Akihisa; Mikami, Noboru; and Yukiyoshi, Atsushi, 4,465,160, Cl. 181-192.000.

Zampino, Michael J.: *See*—
Mookherjee, Braja D.; Wilson, Richard A.; Vock, Manfred H.; and Zampino, Michael J., 4,465,695, Cl. 426-3.000.

Zander, Hendrik J., to U.S. Philips Corporation. Printer comprising a noise-sealing paper-transport roller. 4,465,390, Cl. 400-689.000.

Zanio, Kenneth R., to Ford Aerospace & Communications Corporation. CdTe passivation of HgCdTe by electrochemical deposition. 4,465,565, Cl. 204-56.00R.

Zaske, Erwin: *See*—
Baumgartner, Siegfried; and Zaske, Erwin, 4,465,376, Cl. 366-139.000.

Zato, Thomas J., to Zenith Electronics Corporation. Digital space phone system. 4,465,902, Cl. 179-2.0TV.

Zauner, Johannes: *See*—
Baucke, Friedrich G. K.; Krause, Dieter; Metz, Bernd; Paquet, Volker; and Zauner, Johannes, 4,465,339, Cl. 350-357.000.

Zelkowitz, Hyman L., to Knoll International, Inc. Apparatus and method for upholstering a rigid chair shell. 4,465,534, Cl. 156-91.000.

Zell, Dale R.: *See*—
Asick, John C.; Ritchie, Leon T.; and Zell, Dale R., 4,464,832, Cl. 29-839.000.

Zendron, Johann: *See*—
Blase, Manfred; Dahl, Klaus; Galow, Manfred; and Zendron, Johann, 4,465,557, Cl. 202-241.000.

Zenith Electronics Corporation: *See*—
Zato, Thomas J., 4,465,902, Cl. 179-2.0TV.

Zimmer, Mark F.; Smith, William E.; and Malpass, Donald F., Jr., to General Electric Company. Catalyst composition for the preparation of 3,3,3-trifluoropropene. 4,465,786, Cl. 502-169.000.

Zimmerman, Morris: *See*—
Doherty, James B.; Zimmerman, Morris; and Ashe, Bonnie M., 4,465,687, Cl. 424-274.000.

Zingel, Heinz, to Rieter Machine Works Ltd. Spinning machine, in particular ring spinning machine. 4,464,893, Cl. 57-267.000.

Zinsberger, Alfons: *See*—
Leuschner, Udo; and Zinsberger, Alfons, 4,464,982, Cl. 99-287.000.

Zis, Jerome C.: *See*—
Boyacigiller, Ziya G.; Brubaker, James L.; and Zis, Jerome C., 4,465,996, Cl. 340-347.0DA.

Zollner, Dieter H.: *See*—
Bauer, Hanns Georg; Zollner, Dieter H.; Otto, Josef; Muhlenbeck, Josef; Rittmann, Friedrich; Conradty, Claudio; Lauterbach-Dammler, Inge; and Sonke, Horst, 4,466,105, Cl. 373-93.000.

Zoschak, Robert J.; and Biswas, Bimal K., to Foster Wheeler Energy Corporation. Apparatus for mixing and distributing solid particulate material. 4,466,082, Cl. 366-101.000.

zur Nieden, Erich E.: *See*—
Lehmann, Clemens M.; Feiten, Erwin E.; and zur Nieden, Erich E., 4,465,213, Cl. 223-30.000.

Zweekly, Raymond T., to Valeron Corporation, The. Chip breaking insert for metal cutting tools. 4,465,412, Cl. 407-114.000.

Zycron Systems, Inc.: *See*—
Landino, Paul J., 4,465,961, Cl. 318-811.000.

Zylstra, Henry J.; and Venzke, Donald R., to Square D Company. Trip indicator assembly for electronic circuit breaker. 4,466,042, Cl. 361-115.000.

501 American Nucleonics Corporation: *See*—
Ghose, Rabindra N.; and Sauter, Walter A., 4,466,131, Cl. 455-278.000.

501 Robinette S.F.R., S.A.: *See*—
Hendrick, Jean, 4,464,931, Cl. 73-168.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF AUGUST, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beals, Duane E.; and Page, Russell D., to Caterpillar Tractor Co. Adjustable control console for vehicles. Re. 31,646, Cl. 180-78.000.

Caterpillar Tractor Co.: *See*—
Beals, Duane E.; and Page, Russell D., Re. 31,646, Cl. 180-78.000.

McHale, William D.; and Schoennagel, Hans J., to Mobil Oil Corporation. Startup procedure for reforming catalysts. Re. 31,647, Cl. 208-138.000.

Mobil Oil Corporation: *See*—
McHale, William D.; and Schoennagel, Hans J., Re. 31,647, Cl. 208-138.000.

Page, Russell D.: *See*—
Beals, Duane E.; and Page, Russell D., Re. 31,646, Cl. 180-78.000.

Regan, A. Michael, to Regan Offshore International, Inc. Safety apparatus for automatically sealing hydraulic lines within a sub-sea well casing. Re. 31,645, Cl. 166-340.000.

Regan Offshore International, Inc.: *See*—
Regan, A. Michael, Re. 31,645, Cl. 166-340.000.

Schoennagel, Hans J.: *See*—
McHale, William D.; and Schoennagel, Hans J., Re. 31,647, Cl. 208-138.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bielz, Siegfried: *See*—
Lohrberg, Karl; Bielz, Siegfried; and Janisch, Paul, B1 4,294,815, Cl. 423-478.000.

Burlington Industries, Inc.: *See*—
London, Joe F., Jr., B1 3,824,776, Cl. 57-208.000.

Janisch, Paul: *See*—
Lohrberg, Karl; Bielz, Siegfried; and Janisch, Paul, B1 4,294,815, Cl. 423-478.000.

Lohrberg, Karl; Bielz, Siegfried; and Janisch, Paul, to Metallgesellschaft Aktiengesellschaft. Process of producing chlorine dioxide and, if desired, chlorine. B1 4,294,815, 8-14-84, Cl. 423-478.000.

London, Joe F., Jr., to Burlington Industries, Inc. Fabric having improved pick resistance. B1 3,824,776, 8-14-84, Cl. 57-208.000.

Maurice, Jean, to Societe Anonyme Francaise du Ferodo. Radially movable clutch bearing. B1 3,416,637, 8-14-84, Cl. 192-98.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Lohrberg, Karl; Bielz, Siegfried; and Janisch, Paul, B1 4,294,815, Cl. 423-478.000.

Societe Anonyme Francaise du Ferodo: *See*—
Maurice, Jean, B1 3,416,637, Cl. 192-98.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Bing, Frank, Jr.; Eck, Paul L.; and Haas, Tommy B., 275,125, Cl. D23-40.000.

Ainsworth Nominees Pty. Ltd.: *See*—
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Baughman, Karl T., to Sears, Roebuck and Co. Binocular adjustment knob. 275,110, 8-14-84, Cl. D16-133.000.

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CLASSIFICATION OF PATENTS

ISSUED AUGUST 14, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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247 4,464,798
421 4,464,799
452 4,464,800

CLASS 4

502 4,464,801
506 4,464,802

CLASS 8

400 4,465,490
471 4,465,489
524 4,465,491
589 4,465,492

CLASS 14

20 4,464,803

CLASS 15

42 4,464,804
102 4,464,805
104.3 SN 4,464,806
119 A 4,464,807
250.2 4,464,808
260 4,464,809
320 4,464,810

CLASS 24

68 CD 4,464,811
122.6 4,464,812
237 4,464,813
279 4,464,814

CLASS 26

72 4,464,815

CLASS 28

183 4,464,816

CLASS 29

33 M 4,464,817
252 4,464,818
267 4,464,819
401.1 4,464,820
432 4,464,821
436 4,464,822
572 4,464,823
576 E 4,464,824
577 C 4,464,825
593 4,464,826
622 4,464,828
623.2 4,464,827
718 4,464,833
741 4,464,829
763 4,464,830
825 4,464,831
839 4,464,832
854 4,464,834

CLASS 30

84 4,464,835
92 4,464,836
134 4,464,837
149 4,464,838

CLASS 33

1 M 4,464,839
147 E 4,464,840
174 R 4,464,841
344 4,464,842
363 K 4,464,843

CLASS 34

9 4,464,844
18 4,464,845
58 4,464,846
71 4,464,847
92 4,464,848
110 4,464,849

CLASS 36

44 4,464,850

CLASS 37

55 4,464,851
117.5 4,464,852

CLASS 38

138 4,464,853

CLASS 40

21 C 4,464,854

CLASS 42

87 4,464,855

CLASS 43

18.5 4,464,856
42.33 4,464,857
43.13 4,464,858
58 4,464,859

CLASS 44

1 SR 4,465,493
51 4,465,494
4,465,495

CLASS 47

1.5 4,464,862

CLASS 48

197 R 4,465,496

CLASS 49

213 4,464,863
404 4,464,864

CLASS 51

105 R 4,464,865
165.87 4,464,866
209 R 4,464,867

CLASS 52

69 4,464,868
173 R 4,464,869
188 4,464,870
220 4,464,871
276 4,464,872
293 4,464,873
398 4,464,874
481 4,464,875
484 4,464,876
693 4,464,885
745 4,464,877

CLASS 53

206 4,464,878
418 4,464,879
493 4,464,880
520 4,464,881
530 4,464,882
550 4,464,883
557 4,464,884

CLASS 55

273 4,465,497
341 NT 4,465,498
481 4,465,499

CLASS 56

13.8 4,464,886
16.5 4,464,887
330 4,464,888
341 4,464,889
364 4,464,890

CLASS 57

90 4,464,891
208 B1 3,824,776
212 4,464,892
267 4,464,893
288 4,464,894

CLASS 60

39.141 4,464,895
290 4,464,896
313 4,464,897
436 4,464,898
547.1 4,464,899
591 4,464,900
606 4,464,901
612 4,464,902

CLASS 62

3 4,464,903
52 4,464,904
55.5 4,464,905
93 4,464,906
101 4,464,907
235.1 4,464,908
260 4,464,909
320 4,464,910
476 4,464,911

CLASS 65

3.43 4,465,500
285 4,465,501

CLASS 66

77 4,464,912
166 4,464,913

CLASS 68

23.5 4,464,914

CLASS 70

52 4,464,915

CLASS 71

76 4,465,502
88 4,465,503
4,465,504
92 4,465,505
4,465,506
98 4,465,507
103 4,465,508
119 4,465,509

CLASS 72

17 4,464,916
76 4,464,917
133 4,464,918
162 4,464,919
186 4,464,920
243 4,464,921
286 4,464,922
307 4,464,923
452 4,464,924

CLASS 73

23.1 4,464,925
27 A 4,464,926
38 4,464,927
54 4,464,928
146.8 4,464,929
152 4,464,930
168 4,464,931
204 4,464,932
432 AD 4,464,933
462 4,464,934
660 4,464,935
705 4,464,936
772 4,464,937
861.24 4,464,939
864.13 4,464,941
864.21 4,464,940

CLASS 74

5 F 4,464,942
5.46 4,464,943
10.33 4,464,944
15.6 4,464,945
200 4,464,946
329 4,464,947
411.5 4,464,948
449 4,464,949
501.5 R 4,464,950
4,464,951
690 4,464,952
710.5 4,464,953
752 E 4,464,954
867 4,464,955

CLASS 75

0.5 B 4,465,511
3 4,465,510
10 R 4,465,512
53 4,465,513
60 4,465,514
243 4,465,515

CLASS 81

3.2 4,464,956
460 4,464,957

CLASS 82

2.5 4,464,958

CLASS 83

37 4,464,959
104 4,464,960
346 4,464,961
425 4,464,962
546 4,464,963
830 4,464,964

CLASS 84

1.01 4,464,965
1.03 4,464,966
1.16 4,464,967
1.28 4,464,968
95 R 4,464,969
298 4,464,970
471 R 4,464,971

CLASS 89

1.816 4,464,972
40 B 4,464,973
41 L 4,464,974
41 SM 4,464,975

CLASS 91

365 4,464,976
376 R 4,464,977
459 4,464,978
499 4,464,979

CLASS 92

34 4,464,980

CLASS 99

280 4,464,981
287 4,464,982
312 4,464,983
479 4,464,984

CLASS 100

47 4,464,985
163 R 4,464,986
215 4,464,987

CLASS 102

202 4,464,989
204 4,464,990
233 4,464,991
275 4,464,992
312 4,464,993
333 4,464,994

CLASS 104

9 4,464,995
172 S 4,464,996
4,464,997

CLASS 105

148 4,464,998

CLASS 106

14.12 4,465,516
35 4,465,517
89 4,465,518
91 4,465,519
100 4,465,520

CLASS 110

106 4,464,999
343 4,465,000

CLASS 112

79 A 4,465,001
111 4,465,002
158 E 4,465,003
264.1 4,465,004
270 4,465,005
292 4,465,006
439 4,465,007

CLASS 114

39 4,465,008
56 4,465,009
103 4,465,010
199 4,465,011
266 4,465,012

CLASS 116

34 R 4,465,013

CLASS 118

116 4,465,014
222 4,465,015
303 4,465,016
418 4,465,017

CLASS 119

1 4,465,018
4,465,019
73 4,465,020

CLASS 122

4 D 4,465,021
4,465,022
6 A 4,465,023
17 4,465,024
19 4,465,025
382 4,465,026
406 S 4,465,027

CLASS 123

1 A 4,465,028
52 MB 4,465,035
57 R 4,465,036
90.31 4,465,037
90.55 4,465,038
142.5 E 4,465,039
188 GC 4,465,040
195 A 4,465,029
195 R 4,465,041
197 R 4,465,042
198 P 4,465,030
260 4,465,031
263 4,465,032
295 4,465,033
306 4,465,034
327 4,465,043
357 4,465,044
360 4,465,045
425 4,465,046
4,465,047
440 4,465,048
446 4,465,049
472 4,465,050
486 4,465,051
527 4,465,052
549 4,465,053

CLASS 124

24 R 4,465,054

CLASS 126

123 4,465,055
415 4,465,056
418 4,465,057
429 4,465,058
433 4,465,059
443 4,465,060
449 4,465,061

CLASS 127

36 4,465,521

CLASS 128

1 D 4,465,063
1 R 4,465,062
88 4,465,064
92 BB 4,465,065
132 D 4,465,066
207.18 4,465,067
303 B 4,465,069
303 R 4,465,068
334 R 4,465,070
335 4,465,071
348.1 4,465,072
355 4,465,073
639 4,465,074
672 4,465,075
686 4,465,076
738 4,465,077
759 4,465,078
785 4,465,079

CLASS 130

27 AA 4,465,080
27 E 4,465,082
27 HF 4,465,081

CLASS 131

282 4,465,083

CLASS 132

39 4,465,084
42 A 4,465,085

CLASS 134

10 4,465,522
122 R 4,465,086

CLASS 135

101 4,465,087

CLASS 136

225 4,465,894
4,465,895

CLASS 137

1 4,465,088
101 4,465,089
102 4,465,090
243.6 4,465,091
328 4,465,092
498 4,465,093
557 4,465,094
614.04 4,465,096
4,465,097
614.2 4,465,095
625.21 4,465,098
625.23 4,465,099
625.64 4,465,100
625.68 4,465,101
849 4,465,102

CLASS 138

40 4,465,103
89 4,465,104
104 4,465,105
142 4,465,106

CLASS 139

66 A 4,465,108
66 R 4,465,107
68 4,465,109
370.2 4,465,110

CLASS 141

79 4,465,111
284 4,465,112

CLASS 144

193 D 4,465,113
286 R 4,465,114

CLASS 145

30 A 4,465,115

CLASS 148

18 4,465,523
31.5 4,465,524
37 4,465,525
101 4,465,526
171 4,465,527
187 4,465,528
188 4,465,529
410 4,465,530

CLASS 156

64 4,465,531
83 4,465,533
91 4,465,534
97 4,465,535
133 4,465,536
154 4,465,537
233 4,465,538
250 4,465,539
252 4,465,540
304.1 4,465,541
330 4,465,542
542 4,465,543
548 4,465,544
616 A 4,465,546
616 R 4,465,545
629 4,465,547
630 4,465,548
4,465,549
635 4,465,550
643 4,465,532
4,465,551
4,465,552
4,465,553

CLASS 159

16 R 4,465,554

CLASS 162

168.2 4,465,555

CLASS 164

137 4,465,117
452 4,465,118
457 4,465,119
482 4,465,120
484 4,465,121
491 4,465,122
527 4,465,116

CLASS 165

16 4,465,123
67 4,465,124
76 4,465,125
77 4,465,126
81 4,465,127
151 4,465,128
153 4,465,129
185 4,465,130

CLASS 166

77 4,465,131
156 4,465,132
208 4,465,133
245 4,465,134
261 4,465,135
263 4,465,136
272 4,465,137
303 4,465,138
340 Re.31,645
373 4,465,139
381 4,465,140

CLASS 169

37 4,465,141

CLASS 172

7 4,465,142
49.5 4,465,143

CLASS 173

28 4,465,144
131 4,465,145

CLASS 174

28 4,465,896
48 4,465,897
52 FP 4,465,898
52 R 4,465,899
209 4,465,900

CLASS 175

61 4,465,146
73 4,465,147
329 4,465,148

CLASS 177

1 4,465,149
25 4,465,150
133 4,465,151
180 4,465,152

CLASS 178

22.08 4,465,901
22.16 4,465,153

CLASS 179

2 C 4,465,903
2 TV 4,465,902
5 R 4,465,904
115.5 PC 4,465,905
115.5 SF 4,465,906
156 R 4,465,907

CLASS 180

78 Re.31,646
89.2 4,465,154
169 4,465,155
227 4,465,156
228 4,465,157
271 4,465,158

CLASS 181

129 4,465,159
192 4,465,160

CLASS 187

20 4,465,161
29 R 4,465,162

CLASS 188

73.39 4,465,163
73.44 4,465,164
218 XL 4,465,165
278 4,465,166

CLASS 192

3.57 4,465,167
4,465,168
4 A 4,465,169
48.7 4,465,170
81 C 4,465,171
98 B1 3,416,637
106.2 4,465,172

CLASS 194

100 A 4,465,173

CLASS 198

361 4,465,174
399 4,465,175
400 4,465,176
482 4,465,177
688 4,465,178

CLASS 200

5 R 4,465,908
4,465,909
148 R 4,465,910
331 4,465,911

CLASS 202

99 4,465,556
241 4,465,557
262 4,465,558

CLASS 203

90 4,465,559

CLASS 204

1 R 4,465,560
38 A 4,465,562
43 N 4,465,563
44 4,465,564
56 R 4,465,565
58.5 4,465,561
67 4,465,566
75 4,465,567
98 4,465,568
115 4,465,569
129 4,465,570
159.16 4,465,572
159.2 4,465,571
180 P 4,465,573
180 R 4,465,574
192 C 4,465,577
192 E 4,465,576
192 S 4,465,575
245 4,465,578
255 4,465,579
290 R 4,465,580
4,465,581
299 R 4,465,582
4,465,583

CLASS 206

37 4,465,179
158 4,465,180
188 4,465,181
222 4,465,183
261 4,465,184
264 4,465,185
342 4,465,186
425 4,465,187
522 4,465,188
524.8 4,465,189
526 4,465,190
537 4,465,191

CLASS 208

10 4,465,584
22 4,465,585
45 4,465,586
87 4,465,587
120 4,465,588
138 Re.31,647
208 R 4,465,589
262 4,465,590

CLASS 209

3 4,465,591
236 4,465,592
534 4,465,192
4,465,193
639 4,465,194
704 4,465,195

CLASS 210

96.1 4,465,593
151 4,465,594
238 4,465,595
634 4,465,596
713 4,465,597
721 4,465,598
734 4,465,599
777 4,465,600

CLASS 211

19 4,465,196
40 4,465,197
105.3 4,465,198

CLASS 215

1 C 4,465,199
247 4,465,200

CLASS 219

10.49 A 4,465,912
56.1 4,465,913
69 W 4,465,914
4,465,915
78.01 4,465,916
98 4,465,917
110 4,465,918
121 LG 4,465,919
133 4,465,920
146.24 4,465,921
304 4,465,922
390 4,465,923
492 4,465,924

CLASS 220

3 4,465,201
203 4,465,202
268 4,465,203
269 4,465,204
276 4,465,205

CLASS 221

94 4,465,206
241 4,465,207
279 4,465,208

CLASS 222

23 4,465,209
148 4,465,210
166 4,465,211
504 4,465,212

CLASS 223

30 4,465,213
4,465,214

CLASS 225

48 4,465,215

CLASS 226

158 4,465,216

CLASS 227

67 4,465,217
4,465,218

CLASS 228

37 4,465,219
50 4,465,220
125 4,465,221
170 4,465,222
198 4,465,223
222 4,465,224

CLASS 229

2.5 EC 4,465,225
32 4,465,226
36 4,465,227

CLASS 235

379 4,465,925
472 4,465,926

CLASS 236

20 A 4,465,228
44 E 4,465,229

CLASS 239

2 S 4,465,230
5 4,465,231
36 4,465,232
77 4,465,233
102 4,465,234
107 4,465,235
391 4,465,236
533.3 4,465,237
590.3 4,465,238

CLASS 241

98 4,465,239
121 4,465,240

CLASS 242

1 4,465,241
18 PW 4,465,242
66 4,465,243
72.1 4,465,244
107.4 D 4,465,245
156.2 4,465,246
192 4,465,247
4,465,248

CLASS 244

3.15 4,465,249
122 AG 4,465,250
155 R 4,465,251

CLASS 248

60 4,465,252
75 4,465,253
311.2 4,465,254
441.1 4,465,255
544 4,465,256

CLASS 249

11 4,465,257

CLASS 250

213 VT 4,465,927
231 SE 4,465,928
252.1 4,465,929
288 4,465,930
317.1 4,465,931
370 4,465,932
385 4,465,933
398 4,465,934
440.1 4,465,935
484.1 4,465,936
560 4,465,937
576 4,465,938
578 4,465,939
4,465,940

CLASS 251

5 4,465,258
304 4,465,259
305 4,465,260

CLASS 252

8.55 D 4,465,602
8.55 R 4,465,601
33.4 4,465,603
37.2 4,465,604
46.3 4,465,605
56 R 4,465,606
58 4,465,607
62.54 4,465,608
67 4,465,609
70 4,465,610
143 4,465,611
174.16 4,465,612
364 4,465,613
511 4,465,614
4,465,615
4,465,616
4,465,617
522 R 4,465,618
540 4,465,619
545 4,465,620
582 4,465,621

CLASS 254

279 4,465,261

CLASS 256

24 4,465,262
52 4,465,263

CLASS 260

112 B 4,465,623
112 R 4,465,622
4,465,624
112.5 E 4,465,625
112.5 R 4,465,626
153 4,465,627
158 4,465,628
236.5 4,465,629
239 BC 4,465,630
239.1 4,465,631
245.2 T 4,465,632
410.9 R 4,465,633
413 4,465,634
414 4,465,635
429 R 4,465,636
4,465,637
453 PH 4,465,639
453 SP 4,465,638

CLASS 261

39 B 4,465,640
41 C 4,465,641
44 B 4,465,644
44 C 4,465,642
4,465,643
87 4,465,645

CLASS 264

24 4,465,646
29.6 4,465,647
30 4,465,648
46.5 4,465,710
51 4,465,649
60 4,465,650
161 4,465,651
177 R 4,465,652

CLASS 266

114 4,465,264
226 4,465,265

CLASS 267

131 4,465,266
161 4,465,267

CLASS 269

99 4,465,268

CLASS 270

47 4,465,269

CLASS 271

198 4,465,270
227 4,465,271
246 4,465,272

CLASS 272

78 4,465,273
130 4,465,274
134 4,465,275
137 4,465,276

CLASS 273

1.5 A 4,465,277
144 B 4,465,278
146 4,465,279
153 R 4,465,280
186 R 4,465,281
247 4,465,282
249 4,465,283

CLASS 277

22 4,465,284
25 4,465,285
81 P 4,465,286
235 B 4,465,287
237 4,465,288

CLASS 279

121 4,465,289

CLASS 280

33.99 A 4,465,290
47.13 B 4,465,291
95 R 4,465,292
474 4,465,293
612 4,465,294
4,465,295
668 4,465,296
711 4,465,297
4,465,298
714 4,465,299
725 4,465,300
777 4,465,301
804 4,465,302
4,465,303
814 4,465,304

CLASS 281

31 4,465,305

CLASS 282

29 B 4,465,306

CLASS 285

47 4,465,307
177 4,465,308
373 4,465,309
4,465,310

CLASS 290

54 4,465,941

CLASS 292

144 4,465,311

CLASS 293

132 4,465,312

CLASS 294

67 DA 4,465,313
81 R 4,465,314

CLASS 296

78.1 4,465,315
161 4,465,316

CLASS 297

284 4,465,317

CLASS 299

1 4,465,318
42 4,465,319
81 4,465,320

CLASS 301

5 R 4,465,321

CLASS 303

6 A 4,465,322
23 R 4,465,323

CLASS 307

9 4,465,942
67 4,465,943
473 4,465,944
4,465,945

CLASS 308

3.8 4,465,324
5 R 4,465,325
191 4,465,326

CLASS 310

42 4,465,946
59 4,465,947
62 4,465,948
81 4,465,949
114 4,465,951
162 4,465,950

CLASS 312

11 4,465,327
215 4,465,328
216 4,465,329

CLASS 313

136 4,465,952

CLASS 315

39.71 4,465,953
104 4,465,954

CLASS 318

139 4,465,955
268 4,465,956
345 D 4,465,957
347 4,465,958
696 4,465,959
774 4,465,960
811 4,465,961
817 4,465,962

CLASS 320

46 4,465,963

CLASS 322

2 R 4,465,964

CLASS 323

239 4,465,965
248 4,465,966
285 4,465,967

CLASS 324

73 R 4,465,968
96 4,465,969
116 4,465,970
158 F 4,465,972
158 R 4,465,971
4,465,973
205 4,465,974
4,465,975
251 4,465,976

CLASS 328

120 4,465,977
168 4,465,978

CLASS 330

66 4,465,979
149 4,465,980
281 4,465,981

CLASS 331

1 A 4,465,982
111 4,465,983

CLASS 333

81 A 4,465,984
116 4,465,985
148 4,465,986
156 4,465,987
4,465,988
209 4,465,989
247 4,465,990

CLASS 335

151 4,465,991
205 4,465,992
287 4,465,993

CLASS 338

164 4,465,994

CLASS 339

14 R 4,465,330
4,465,331

CLASS 340

347 CC 4,465,995
347 DA 4,465,996
542 4,465,997
557 4,465,998
784 4,465,999
825.08 4,466,001
825.5 4,466,000
870.31 4,466,002

CLASS 343

826 4,466,003

CLASS 346

74.4 4,466,004
140 R 4,466,005
153.1 4,466,006
200 4,466,007

CLASS 350

96.19 4,465,332
96.20 4,465,333
96.21 4,465,335
96.30 4,465,336
96.33 4,465,334
164 4,465,337
350 S 4,465,338
357 4,465,339
4,465,340
4,465,341
427 4,465,342
428 4,465,343
429 4,465,344
455 4,465,345
500 4,465,346
538 4,465,347

CLASS 351

211 4,465,348

CLASS 353

25 4,465,349

CLASS 354

4 4,465,350
173.11 4,465,351
406 4,465,352
415 4,465,353
426 4,465,354
475 4,465,355

CLASS 355

3 DD 4,465,356
3 R 4,465,357
4,465,358
4,465,359
14 R 4,465,360
14 SH 4,465,361
15 4,465,362
4,465,363
40 4,465,364
45 4,465,365

CLASS 356

1 4,465,366
23 4,465,367

218 4,465,368
222 4,465,369
224 4,465,370
237 4,465,371
359 4,465,372
374 4,465,373
375 4,465,374
434 4,465,375

CLASS 357

22 4,466,008
30 4,466,009
38 4,466,010
48 4,466,011
49 4,466,012
51 4,466,013

CLASS 358

10 4,466,014
27 4,466,015
31 4,466,016
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330 4,466,022

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132 4,466,036
133 4,466,037

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139 4,465,376
273 4,465,377

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182 4,466,084

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414 4,465,488

CLASSIFICATION OF DESIGNS

D6—	300	275,062			275,068		47	275,083		53	275,099		34	275,115	D28—	30	275,131
	360	275,049			275,069		58	275,084		86	275,100		38	275,117		35	275,132
		275,054	D8—	2	275,070		59	275,085		92	275,101		40	275,116		77	275,133
	366	275,050		51	275,071		78	275,086		106	275,102		114	275,118		80	275,134
		275,051		99	275,072		83	275,087		114	275,103		115	275,119	D29—	2	275,135
		275,052		330	275,073		118	275,088			275,104			275,120	D32—	22	275,136
		275,053		373	275,074	D11—	34	275,089		115	275,105			275,121	D34—	7	275,137
	380	275,060		382	275,075		136	275,090	D15—	5	275,106		150	275,122		33	275,138
	467	275,058		395	275,059		157	275,091		25	275,107	D22—	7	275,123			275,139
	478	275,057		399	275,076	D12—	126	275,092	D16—	30	275,108		19	275,124		37	275,140
	505	275,061			275,077		182	275,093		133	275,109	D23—	40	275,125		40	275,141
D7—	50	275,063	D9—	300	275,078	D13—	30	275,094			275,110		149	275,126			275,142
	102	275,065		310	275,079	D14—	1	275,095	D17—	20	275,111	D24—	26	275,127			
	104	275,064		315	275,080		12	275,096	D19—	37	275,112		66	275,128	D47—	6 E	275,143
	137	275,066	D10—	9	275,081			275,097	D21—	13	275,113	D25—	61	275,129	D99—	28	275,055
	151	275,067		40	275,082		30	275,098			275,114	D26—	94	275,130			275,056

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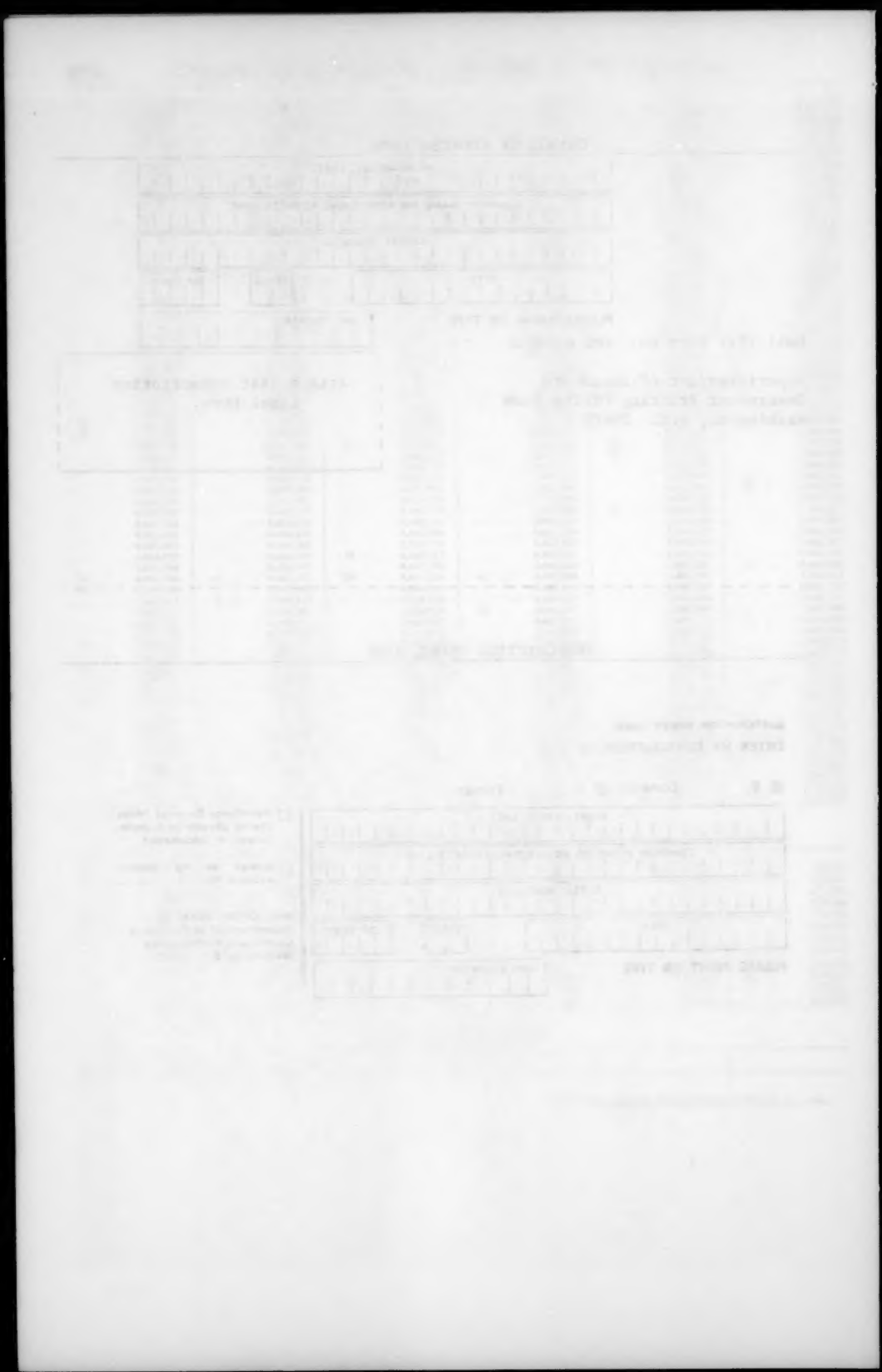
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